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The Routinization of Innovations in an Urban School System

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THE ROUTINIZATION OF INNOVATIONS IN AN URBAN SCHOOL SYSTEM

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Abstract

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The purpose of this study is to identify conditions which make the success of innovations in public education more likely, thus helping administrators make better use of scarce resources. Nine innovations in Norfolk Public Schools in Virginia were examined. These included an automated student information system, electronic mail, an alternative school for pregnant teens, and a special education parent center.

A multiple case study methodology was employed in conducting this research. Data was gathered from interviews conducted with administrators, practitioners and other key actors involved with each innovation. Additionally, site visits were made for each case, relevant documentation examined, and reports written according to the format outlined in a case study protocol.

Degree of routinization was measured by the attainment of 10 events, such as funding, training, personnel support, organizational governance and maintenance. These 10 organizational events make up the "passages and cycles" framework developed by Robert Yin. Eight factors such as

service payoffs, administrative support, practitioner support and prior need were then proposed to explain each innovations' level of routinization.

The findings are that the degree of routinization of innovations is related to upper administration support and service payoffs. Further findings are that the attainment of any level of routinization is generally associated with the presence of a single, active innovator, and of practitioner support, and with the absence of internal competition for resources. It was also found that the degree/level of routinization could not be explained simply by its age.

Dedication

This dissertation is dedicated to my wife, Joanna, without whose support its completion would not have been possible.

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I am pleased to acknowledge the efforts of my guidance committee on this work, especially the support and attention paid to it by the chair, Dr Leonard Ruchelman. I am also extremely grateful to Mr Davis Moore, the Senior Coordinator for Research with Norfolk Public Schools, for his many hours spent discussing and advising me on this project.

TABLE OF CONTENTS

Chapter I

Statement of the Problem

Since the publication of A Nation at Risk, there has been no shortage of literature calling for change in the operation of America's public schools. The Bush administration's America 2000 (1991) called for a new generation of American schools. President Clinton, in his 1994 State of the Union address, also called for reform including charter schools and greater parental choice within the public school framework. Virginia Governor George Allen supports the introduction of vouchers in education, a return to the basics in instruction, and the down-sizing of administrative positions in public school administration. The Virginian-Pilot and Ledger-Star reported the city of Portsmouth, Virginia's interest in the Edison Project, a program aimed at creating a network of elite, profit-making schools, commenting, "There's a hunger for innovation" (Staunton, 1994, p.4). In Norfolk, Virginia the superintendent of schools, in a January 1994 memorandum, called on all central office administrators to re-examine what they are doing and suggest new ways of doing business.

Like all bureaucracies, public educational systems are never completely static. They continuously interact with external forces at the national, state and local levels. Accordingly, administrators need to plan for change, to adopt and implement it, and stabilize such change in their localities. Planned change is difficult because it involves

developing an awareness of the need for change, and building support from administrators, practitioners, clients and the community. Additionally, implementation then can be stalled at multiple veto points. Even after successful implementation, institutionalization of change can vary from marginally to highly incorporated. Unless a way is found to stabilize the new situation, all the resources applied to the planned change effort will have been in vain.

A basic interest of this study is to determine what factors affect the routinization of selected innovations in the schools of Norfolk, Virginia. It is a problem for Norfolk schools when scarce resources are employed in planning, piloting, adopting and implementing innovations that subsequently may be ignored by practitioners or otherwise fail to become institutionalized. Findings are based on case studies as documented by secondary data sources and interviews with key actors. It is anticipated that the conclusions will serve as the basis for recommending ways in which Norfolk schools and other school districts can increase the likelihood of success for innovations. This research also provides data to support much of the findings in the literature on innovation, and identifies issues of interest for future study.

Research Questions

This study examines the routinization of innovations

through case studies of nine innovations in Norfolk Public schools in Virginia. The purpose is make better use of scarce resources.

This study seeks to answer the following questions:

(1) How do innovations become routinized in an urban school system, namely Norfolk Public Schools in Virginia?

(2) Why do some innovations become more highly routinized than others in the Norfolk school system?

(3) What are the factors which facilitate routinization in Norfolk Public Schools?

Research Objectives

The basic purpose of this study is to explore the processes by which new programs or services become incorporated or routinized in an urban school system, specifically in Norfolk Public Schools in Virginia. A prime interest is to discern what factors are associated with routinized innovations. The study examines the processes by which nine innovations in Norfolk Public Schools have become institutionalized, or routinized.

Specifically, the research objectives are:

1. To examine the process of innovation leading to routinization in the urban school system setting of Norfolk, Virginia.

2. To identify specific factors which facilitate or impede the routinization of innovations in this urban school system.

City of Norfolk Profile

Located in southeastern Virginia, the city of Norfolk covers a 66 square-mile area and is surrounded by water on three sides, thus making it a major port community of Hampton Roads and the mid-Atlantic region. Principle aspects of Norfolk's economy are finance, education, medical services, ship building and repair, tourism and the military, being the home to the world's largest naval base. The Port of Norfolk is the largest foreign, water-borne commerce port in the United States. More than 70 million tons of general and bulk commodities move through the marine facilities annually. The city is also the center of one of the most extensive rail systems in the country. Norfolk Southern Railroad Corporation, headquartered here, encompasses over 14,000 miles of route mileage, leading directly to 20 states and Canada. Norfolk is the hub of the 29th largest Metropolitan Statistical Area (MSA) in the United States, consisting of Norfolk, Virginia Beach and Newport News, with a combined population of approximately 1,400,000.

With an urban population of 261,229, representing 22% of the statistical area, Norfolk is predominantly middle

class. In terms of race, 56.7% of the population is caucasian, 39.1% African -American. The percent of families in the city below the federal poverty line is 15% (U.S. Census, 1990). The ethnic composition of the school population is 61% African-American, 35% Caucasian and 4% Asian, Hispanic or Native American. Of the total school population 55.1% qualify for free and reduced-price lunches. Median household income (1991) was $21,739, with approximately 30% of the annual household incomes under $15,000. The median household income for the region was $33,000. The 1991-92 Composite index of Local-Ability-to-Pay is a weighted, division-level measure that includes local adjusted gross income, local sales tax, and local value of real property. The 1991 local ability to pay for education for Norfolk was 0.33150 (OAP, 1993).

The City of Norfolk has several distinguishing features: it is the financial center of southeastern Virginia and northeastern North Carolina; it has the greatest concentration of permanent naval installations; it is the site of major health referral centers for patients throughout the east coast. In addition, Norfolk is one of the most popular tourist destinations in the mid-Atlantic region and is the cultural center of southeastern Virginia. More than 100,000 active duty military personnel are stationed in the area.

Norfolk School System

In 1958, Norfolk complied with a federal court order to desegregate its schools. In 1971, a second federal court order resulted in the initiation of cross town busing. At the time the school system as a whole was 63 percent white and 33 percent black. The 1970's saw thousands of whites depart to the surrounding suburbs. By 1984, the minority/majority ratio in the schools was approximately 60:40.

In the early 1980's, a movement began to end cross town busing. White government officials began to publicly express fears that busing would scare away all whites from the city, thus defeating the whole purpose of busing for integration. True or not, this became a major point of contention because white flight had slowed to a trickle by that time.

The School Board mapped out a plan, which eventually focused exclusively on the elementary schools. At that level, white parents complained most loudly about the high cost and long bus rides. Many blacks at the time saw these arguments as veiled racist threats to return Norfolk to segregation.

In fact, several blacks challenged the plan in court, holding up the end of busing until 1986. Federal Circuit Court eventually ruled that ending busing was in the district's best interest, even if it did create 10 de facto

segregated black schools.

Black board members then engineered a compromise that has since guaranteed extra money to the all-black elementary schools. They also promised that secondary schools would remain integrated by busing, a promise kept to this time. Table I summarizes the major features of the school system.

TABLE 1

Norfolk Public Schools: Highlights, September 1992

Area of the city: 66 square miles

City Population 261,229

Pupil Mobility Rate: 38.19%
Student Enrollment 37,890

Schools Ethnic Composition:

African-American	61.3%
American-Indian	.1%
Asian-American	2.3%
Caucasian	34.8%
Hispanic	1.5%

Source of Schools' Funding:

Federal	2.8%
State	44.0%
Local Fees/Contributions	42.9%
Sales tax	10.3%

Per Student Expenditure:

1991-92	$4,686.65
1992-93	$4,896.97

Students Eligible for Free/Reduced Lunch: 55.1%
(February, 1993)

Percent of Students Bused 57%

Average class size:

Elementary	23.97
Middle	25.2
High	21.9
Overall	23.69

Number of Schools:

Elementary	36
Middle	8
High	5
Voc/Career Centers	1
Pregnant Teens	1
Spec Ed. Preschool	1
Skills Center	1
Gifted Center	1
Early Childhood Ctr	1

Percent Students Planning Post-Secondary Education: 87%
(Includes 4 yr, 2 yr, & business/tech schools)

Retention rate:	12.4%
Dropout Rate	6.4

School System Staff 1992-93:

Administrators	197
Certified Teachers	3,220
Support Staff	1,661

Average Annual Teacher Salary: $32,433

Virginia's average Scholastic Aptitude Test score in 1993 was 894, 125 points higher than Norfolk's and 8 points below the national average. The city has a much higher percentage of poor children on average than the state; 37 percent of city students who took the Scholastic Aptitude Test in 1993 were from families with incomes under $20,000 compared to 14 percent statewide.

The total 1992-93 General Fund Budget for Norfolk Public Schools was $173,298,000, with the following breakdown:

state funds	$76,245,000	44.0%
federal funds	$ 4,930,000	2.8%
misc local funds (rentals etc)	$ 639,000	0.4%
1% sales & use tax	$17,850,000	10.3%
City of Norfolk Funds	$73,634,000	42.5%
	$173,298,000	100.0%

(Norfolk Public Schools, 1993).

The 7 member governing school board is appointed by city council and has no independent revenue generating authority. Members are appointed to 4 year terms, with 3 members reappointed after 2 years and the others 4 years later. Any citizen of Norfolk may nominate a prospective school board member at public hearings held every two years. The school system is administered from a central office by a superintendent, a cabinet of 5 assistant superintendents and 16 directors; and by 50 building principals at locations throughout the 64 square mile city.

Norfolk Public Schools was selected as the site for

this research because it is an urban, multicultural school system confronting many typical inner city problems. Its large minority student population, its recent ending of cross town busing at the elementary level, and the subsequent creation of all-minority target schools, has posed pressure for innovation.

It should be noted, furthermore, that the school system is recognized as being innovative. In 1988, the National School Superintendents' Association recognized the Norfolk superintendent as an innovative leader when they named him as superintendent of the year. Northside Middle and Norview High were recently recognized by the state as model schools. The American Association of School Administrators has awarded grants for teachers of Higher Order Thinking Skills at several schools, and Yale University has selected one elementary school in the city as a "Comer-Zigler" model site aimed at improving the education of children of low socio-economic families. The system is alone in Virginia in having a partnership with the National Aeronautics and Space Agency, aimed at carrying a science experiment into space. Other examples of innovation are a separate school for pregnant teens, a Skills Center for young adults, and a parent resource center for the parents of special education children. Additionally, the Norfolk school system is the only one in Virginia with its own data processing department and is in the forefront in school library automation.

Definition of Terms

Innovation: For the purposes of this study, an innovation is an existing program or service considered new by an expert panel of senior administrators when introduced into the school system between 1963 and 1990.

Innovation Types (Administrative, Technical or Service): The innovations were of three types: technical (for example, computer system innovations), administrative (for example, new methods of managing custodial services), and service (directly impacting on students).

Adoption: A specific series of events, during which the innovation was initiated into the organization, and resources were allocated for implementation.

Implementation: A subsequent series of events after adoption, during which plans were made for training relevant practitioners, the innovation was introduced to practitioners, support was broadened, and progress was monitored. Implementation is that period during which changes in performance of members take place as per the innovation requirements.

Routinization: The "incorporation", or "institutionalization", of an innovation into an organization - as opposed to its mere proposal, adoption, introduction, or implementation.

Passages and Cycles: Organizational events in the life history of an innovation. "A passage occurs when an

innovation makes a transition from one organizational state to another, such as the shift from soft to hard money. A cycle occurs when an innovation has survived a periodic organizational event such as turnover in personnel" (Yin, 1979, p.69).

Marginal Routinization: Marginal routinization of an innovation consists of the achievement of only 0 - 3 passages and cycles.

Moderate Routinization: Moderate routinization of an innovation entails the achievement of 4 - 6 passages and cycles.

High Routinization: High routinization of an innovation consists of the achievement of 7 - 10 passages and cycles.

Core application: A core operation either is directly related to the required instructional program as defined in Virginia's "Standards for Accrediting Public Schools", (Commonwealth of Virginia, 1988) or a non-optional service offered by the school system (such as payroll, custodial, or budgeting).

Service payoffs: Service payoffs are visible, existing evidence of measurable benefit or, where no documentation exists, such benefit is strongly stated by all parties interviewed for that innovation.

Prior Need: Prior need means documentary evidence, or repeated testimony, showing that adoption of the innovation was out of crisis conditions or blatant, obvious need.

Other constructs employed in the study and not defined above are: practitioner support; internal adversary group; single, active innovator; community/client support; and upper-level administrator support. These concepts were judged to be present or absent based upon multiple sources of evidence, documentary and testimonial, gathered during conduct of the case study research. For example, for both practitioner support and upper-level administrator support to be present for an innovation, it had to be so stated by the key actors - both administrators and practitioners - preferably with some kind of documentary evidence to support their testimony. Also, the degree of such support for an innovation was evaluated against the degree of support stated by those associated with all of the other innovations. Additionally, another tactic was to have the case study reports reviewed by key informants for comment - to dispel any suspicion that what the researcher has concluded is invalid.

Significance and Need for the Study

There is clearly a need for studies that may assist urban school administrators in successfully incorporating innovations after they are adopted and implemented. The problems of such systems have been documented often, perhaps no more clearly than in Savage Inequalities (Kozol, 1991), which describes the inferior conditions of school systems in

East St. Louis, Camden, Washington D.C. and other urban areas. Kozol describes blatant inequity and calls for radical reform. Clearly radical reform is unlikely in the short term, but localities can attempt to make innovative changes at a micro level. Innovative programs continue to be designed and implemented in many urban districts. The link between implementation and routinization is very important. Louis (1986) states that we need to understand the entire process of adoption, design, implementation and institutionalization as a whole. Research exploring the process of routinization adds to the knowledge base on change factors that accompany full routinization of innovations. This should help administrators intervene where innovations are not working.

Fiske (1991) has shown in Smart Kids, Smart Schools that innovations can be successful given the right circumstances, and that they can make a difference for individual children. It is important to uncover the factors associated with successful, highly routinized innovations in urban school districts. "We do not know much about the normal evolution of new service practices" (Yin, 1979, p.3). Knowledge of the routinization process is important to assure long lasting results for new initiatives, and is certainly a significant reason for conducting research.

The findings of this research should be of general interest to urban school systems in assisting them in

incorporating new innovations. Urban school systems share declining federal funding at a time when they are being asked to take on greater responsibilities, such as combating youth violence and teen pregnancy. To address these growing demands, school systems must ensure a higher success rate for the innovations they might introduce. Failure to do so is wasteful. Success in doing so could lead to cost savings.

While lessons can be learned from other areas and other studies, the findings will be of specific interest to administrators in the Norfolk school system. Given the fact that the Norfolk School Board is appointed and given the return to neighborhood schools in Norfolk, the school system is better served looking at its own successes and failures in developing strategies for the incorporation of innovations. This study seeks to provide data to assist in the development of such strategies.

In addition, the study seeks to contribute to the general understanding of the routinization of innovations in bureaucracies as it is described in the literature on innovations. Factors proposed in this research as important to routinization of innovations have been identified in the literature. The research will thus further test and confirm ideas and theories of innovation presented in the literature.

Chapter II contains the review of literature. Chapter

III explains the research methodology. The nine case studies make up Chapter IV, and Chapter V is devoted to data analysis and conclusions.

Chapter II

Review of the Literature

A review of the literature reveals four basic approaches to studying bureaucratic innovation: (1) research, development and diffusion; (2) social interaction; (3) innovative organizations; and (4) organizational change. In general, the literature review shows that, of the four approaches, organizational change provides the best framework for analyzing the process of innovation in a large urban school system.

Research, Development and Diffusion

Much of the research on innovations has focused on the diffusion of innovation. The specific study of the diffusion of innovation began in the late 1930's when two sociologists, Ryan and Gross, investigated the spread of hybrid seed among Iowa farmers (Merritt and Merritt, 1985). This study launched a new approach to the study of communication and change that was soon emulated by an increasing number of researchers in many fields. The four main elements in the classical model of diffusion of innovations are (1) the innovation, (2) communication channels, (3) time, and (4) the members of a social system. Researchers indicated that innovations perceived as having greater relative advantage, compatibility, trialability, observability and lack of complexity, will be adopted more

rapidly than others. In addition, they concluded that it is the interpersonal networks of communication carrying messages about an innovation that convince individuals to adopt it. Furthermore, system effects related to the social structure of a system act to impede or facilitate the rate of diffusion and adoption of an innovation. For instance, change agents have been observed to act to influence innovation decisions in a direction deemed desirable by the change agency. This early work focused on the diffusion of an innovation from one individual to another.

Havelock's (1971) work is useful in outlining this early innovation theory. He named 7 factors that account for most phenomena associated with the dissemination and utilization of innovation:

1. Linkage: the number, variety and mutuality of "contacts" and degree of inter-relatedness. The more and stronger the better.

2. Structure: of the user system, resource system, of the dissemination-utilization strategy, of the message (coherence). Successful utilization activities tend to be structured activities.

3. Openness: social climate favorable to change. Closed systems and closed minds are, by definition, incapable of taking in new messages from outside.

4. Capacity: the capacity to marshall resources (for example, wealth, size, power, centrality, education, intelligence, and mobility. Those who already possess the most resources have the "risk capital" needed to get even more.

5. Reward: the frequency, immediacy and amount of positive reinforcements. The message would not work if it has no service-payoffs.

6. Proximity: Nearness in time, place and context. The

proximity of users to one another, to leaders, to resources, increases the likelihood of solving unforeseen problems and achieving success.

7. Synergy: ("synergic" - exerting force together or in combination). There should be a variety of messages generated pertaining to the change directed to the potential user on a number of different formats and coordinated to the one goal:adoption of innovation. In other words, management must act synergistically, bringing together a variety of message components and focusing them, in combination, in sequence, and in repetition, upon the potential user.

In the 1970's, a number of major criticisms of such diffusion research began to appear (Rogers and Shoemaker, 1971; Downs and Mohr, 1976). The diffusion model was blamed for restricting theoretical advances in the study of innovation in organizations. The 1970's saw a shift from the study of organizational innovativeness to the study of the innovation process. The use of an "innovation design science" (Downs and Mohr, 1976) was suggested in place of the "multiple innovation design". The study Implementation:How Great Expectations in Washington Are Dashed In Oakland focused attention on how policies and programs are accomplished, or fail to become accomplished (Pressman and Wildavsky, 1973). There was a shift from the study of the diffusion of innovations to the study of the innovation process.

Briefly, the diffusion model was criticized for several reasons: (1) the perceived characteristics of innovation (size, resources, organizational obstacles etc.) vary from one agency to the next; (2) the major interest in the

innovative process for organizations is implementation (including "institutionalization" of a new idea) not just adoption; (3) the realization that the adopter also can play an active creative role in the innovative process, even modifying and perhaps reinventing the innovation. The approach is biased towards the external environment, giving little attention to coalitions within the innovating organization. Critics like House (1974) and Berman and McLaughlin (1974), suggest that a better, more relevant approach is to begin with an examination of the service practitioners' routine activities and constraints.

The Social Interaction Approach

The social interaction perspective has its roots in anthropology and its researchers' primary concern is the measurement of the flow of a change object through a social system over time. It focuses on the effects of social structure and social relationships and groupings on the fate of innovations. Researchers following the perspective usually are indifferent to the ultimate fate of an innovation, for them the process ends when the user adopts. This approach deals with situations where individuals adopt specific innovations, for example, where doctors adopt a new drug for prescription, or farmers adopt new agricultural techniques. Rogers and Shoemaker (1971) state that many studies have compared the characteristics of individuals who

are early adopters with the characteristics of those who are not. Studies have also attempted to identify the conditions that may predict the rate of adoption, by examining the characteristics of the communications network that may lead to rapid or slow rate of adoption. The theory identifies relative advantages, compatibility, complexity, divisibility and communicability as characteristics of an innovation which are factors in determining whether or not the innovation is adopted. The social interaction approach mainly has dealt with the behavior of individuals and is therefore not viewed as useful in describing or explaining the innovation process in organizations.

The Innovative Organizations Approach

In the late 1960's and early 1970's, this model for the diffusion of innovations was applied to the study of innovation in organizations. These studies of organizational innovativeness were modeled closely after the earlier studies of individual innovation. The study of innovation in local public health departments by Mohr (1969) is a good example of the many organizational innovativeness studies. He investigated 93 health departments in three states and a Canadian province, using interviews with the department heads to gather the data. He measured the "innovativeness" of each department (the dependent variable) by the health innovations each had adopted. At each site

Mohr examined independent variables such as motivation of health officials, department size, resources available, and organizational obstacles before performing a correlational analysis. The correlational analysis led him to conclude that innovativeness was a function of motivation, obstacles and resources. Such research usually consisted of cross-sectional survey data of innovativeness in a sample of several hundred organizations. The approach provided some insights into the characteristics of innovative organizations as a group, but very little understanding about intraorganizational innovative behavior in individual bureaucracies. About 500 such studies of organizational innovativeness were identified in a review of the literature (Rogers, 1983). The innovative organizations approach has attempted to identify the important characteristics of innovative organizations. Clues about the innovation process are inferred from the similar characteristics found shared by innovative organizations as a result of correlational analysis. There have been several reviews of the literature in which the characteristics of innovative versus non-innovative organizations have been compared. These reviews of such comparative research (Becker and Whisler, 1967; Rothman, 1974) conclude that no dominant set of characteristics has emerged. The data is usually aggregated in some manner, so that organizations are defined by an index such as the number of innovations that have

occurred within the organization; or, for example, the student/teacher ratio in innovative versus non-innovative school districts. The approach does not attempt to develop any explanation of organizational change. Little therefore is learned about the innovative process, rather change processes are inferred from static characteristics.

The Process of Organizational Change

The 1970's saw researchers began to engage in more in-depth case studies of the innovation process, instead of an over dependence on survey approaches to gather cross-sectional data about the correlates of innovativeness. The case study approach exemplified what Mohr (1978) called a process model rather than the old variance model. The current theoretical interest is in the process of innovation, especially the routinization of innovations. In brief, the current thinking is that there is a more long-term payoff in both theoretical and policy terms from improved knowledge of the innovation "process" than from the "correlates of innovativeness" approach.

Tansik and Radnor's (1971) case study evaluated the success of the Planning - Programming - Budgeting System, (commonly known as PPBS) since its introduction into the civilian agencies of the federal government in 1969. The research was in effect a detailed case study which evaluated books, articles, the transcripts from congressional hearings

and the results of their field study. This field work involved indepth studies in almost 50 agencies. A theoretical "life-cycle" framework was proposed which attempted to explain the process by which new, innovative activities become integrated into organizations. Four life-cycle phases were described: (1) a penetration-missionary phase, (2) an organizational resistance and difficulties phase, (3) organizationalizing and deprofessionalism, and (4) a specialist and maturity phase. In phase one, change agent(s) / key actor(s) and/or environmental forces bring pressures for change. Key actors (missionaries) make concerted efforts to make others aware of innovation. Especially common is the attempt to gain a top management sponsor.

In phase two, there is often fear of the unknown, fear of loss of control. Allocation of resources and top administrative support is crucial. Phase three is similar to what Lambright and Flynn (1977) called "underinnovation" and is a period of bargaining between zealots and conservers, often leading to "deprofessionalism" (a watered down version of the innovation). The level of deprofessionalism is linked to use and support by top management.

Phase four refers to a specialist stage that can emerge (rather than continuing deprofessionalism) in which the innovation may "mature". Maturity is defined as the full

and routine organizational acceptance of the new innovation. Tansik and Radnor found that top management support was a crucial variable. It was mentioned often as being relevant in the various life-cycle states. Particularly, their resource allocation decisions were crucial. They found that initial resource outlays must be rather significant - particularly in relation to size and quality of staff and purchase of resources such as computers - to generate significant momentum to sustain a new activity. Other manifestations of support are usage by top administrators of the outputs of the new innovation, public praise, and overt requirements or suggestions to other organizational members concerning usage of the new function.

McLaughlin (1975) stressed the part played by the actual implementors and the communication between them and policy formulators in determining the success of a program. She too focused on the importance of the interest shown by principal actors and the support they give to practitioners. McLaughlin stressed the importance of principal actors achieving "mutual adaptation" with the practitioners (making the necessary changes in the program to allow it to work in the particular setting).

Rein and Rabinowitz (1977) contributed to the field with their "principle of circularity" model. The model incorporated practitioners as key actors in the innovation process, and made communication between bureaucrats at all

levels a crucial aspect of policy/program implementation. The model stressed linkages occurring in both directions among a policy formation environment, policy implementation environment and a policy evaluation environment.

Van Meter and Van Horn (1975) identify a number of studies that look explicitly at the problems of policy implementation, giving primary attention to the literature on organizational change believing it has the greatest theoretical contribution to make (Bennis, 1966; Downs, 1967; Katz and Kahn, 1966). Their conceptual framework utilizes the various partial and insufficient explanations in an effort to provide the basis for a more comprehensive understanding of the innovation process.

Their model helps achieve balance by focusing on the importance of practitioner support for the innovation (versus the Tansik and Radnor focus on top management support). The model identifies key variables such as: the importance of good communication of standards and objectives, administrative support, the characteristics of the implementing agencies, the economic, social and political environment; and the disposition of practitioners. Linkages are hypothesized between these components of the model, for example, since the standards and objectives of policies have an indirect effect on performance, the delivery of services will be influenced by the manner in which standards and objectives are communicated to

practitioners. Similarly the disposition of practitioners can be influenced directly by the availability of resources. Support is not encouraged when few benefits are perceived.

Environmental conditions are important. When the community perceives the problems to be addressed as severe and is vocal in support, practitioners are more likely to accept the policy's goals, objectives and standards. The model aids in the description of the innovation process (Van Meter and Van Horn, 1975).

After a two year study of technological innovations, Lambright and Flynn (1977) reported on 14 case studies in Rochester and Syracuse, New York. The innovations were chosen to provide comparison across cities and across functions, with a view to selection of innovations with significance for cities in general. Innovations in the data base involved a range of urban functions: education, fire fighting, housing, law enforcement, solid waste management, resource recovery, mass transportation, and cable television. They covered a range of scales from $2500 for a computer system to over $50 million for resource recovery plants. Included were hardware technologies and new managerial techniques.

The article focuses on coalitions (politics) central to understanding successful adaptation and implementation of innovations. Lambright and Flynn suggest that the nature of bureaucracy-centered coalitions is central to understanding

the course of technological innovation in the delivery of local public services. For innovation to occur, bureaucrats must be motivated by some external threat or opportunity to seek a solution that not only solves a perceived service problem, but also enhances bureaucratic self-interest. Sometimes a manufacturer pushes some solution, spurring the administrators to action. In advocating technologies they wish to adopt, local bureaucrats construct a coalition of allies which, ideally, has two axes: one vertical axis that is intergovernmental (usually necessary at time of adoption) and a horizontal axis that involves the employees who will implement the innovation and members of the local community. While the implementing employees usually have least power in deciding on adoption of the innovation, they can effectively delay and defeat the innovation if they oppose it. Employee resistance is often based on fear of losing their jobs or some of their status. Lambright and Flynn found that agencies succeed in innovating by reassuring employees that the change is not detrimental to them, by building coalitions, and by "under-innovating", (deliberately dampen the innovation to assure it conforms with what will be accepted). They stressed the importance of upper-level administrative support, especially during the routinization stage of innovation.

A related work in the early eighties by Peters and Waterman (1982) examined innovative companies with a focus

on the processes of innovation. Peters and Waterman started their research in 1979-80, and were interested in what they called "excellence" in large private corporations. They chose what they considered to be 75 highly regarded companies, 13 of which were European and were quickly dropped from the study leaving 62 American businesses. Peters and Waterman conducted structured interviews in about half these organizations. The remainder were studied through secondary sources, for example, press coverage and annual reports for the previous 25 years. The sample was not intended to be representative of U.S. companies as a whole. What they wanted was a list of companies considered to be innovative and excellent. Excellent companies were those trying "to build some sort of major new corporate capability - that is to become more innovative.." (Peters and Waterman, 1982, p.8). Peters and Waterman employed six measures of long term superiority: three were measures of growth and long-term wealth creation over a twenty year period, three were measures of return on capital and sales. In order to qualify as a major performer, a company must have been in the top half of its industry in at least four out of six of these measures over the full twenty year period. They applied a final measure of innovativeness by asking industry experts (businessmen) to rate the companies twenty year period of innovativeness, defined as a continuous flow of leading industry products and services

and a general rapidness of response to changing markets.

Imposing these criteria meant that nineteen companies dropped from the original list of 62. Of the remaining 43, 21 were interviewed indepth, with less intensive interviews in each of the remaining twenty two. The interviews and research yielded eight attributes of top-rated, innovative companies (which the authors describe as follows): (1) "a bias for action": these companies are not slowed by over analysis; (2) "close to the customer": they listened and actually took ideas from the customer; (3) "autonomy and entrepreneurship": they encourage practical risk-taking and support good attempts; (4) "productivity through people": treating the rank and file as the root source of quality and productivity gain. The excellent companies are a large network of informal, open communications; (5) "hands-on, value-driven" management by "wandering around"; (6) "stick to the knitting", to doing what you know; (7) "simple form, lean staff": none was run with a matrix organization structure - the underlying structural forms and systems are simple; (8) "simultaneous loose and tight properties": the companies are both centralized and decentralized, promoting autonomy on the shop floor but the executives are strict centralists around a few core values.

Kellman (1990) differentiated between public and private sector innovation. He identified American culture's basic distrust of government as an impediment to innovation,

stating that it is incorporated directly into our procedures, regulations and organization: "We fear discretion because we do not trust officials to live up to high standards of probity, unless we keep a close eye on them. We establish therefore a system of public management based on rules" (Kellman, 1990, p.15). Such a system makes innovation more difficult to achieve in the public sector.

Behn (1991) also concluded that innovation is difficult for governments in general:

> ...anyone who has dealt with the U.S. Army, a college registrar's office, the drivers' license bureau, or a social welfare agency...can tell a good horror story about the evils of bureaucracy...Thus few will be surprised to learn that scholars of business report that bureaucratic organizations lack the flexibility to innovate, or that nonbureaucratic organizational structures are essential to providing that flexibility (Behn, p.7, 1991).

Behn stated that government agencies have few "slack resources". They are inflexible, with narrowly defined job descriptions for their personnel. He claimed that since government is established to achieve big purposes, this results in mission statements so big and so broad that individual purpose becomes unclear, resulting in a focus on the routines to be followed.

Behn found that what managers do (and should do) is "grope along" (Behn, p.643, 1988). He stressed the importance of a clear sense of mission, as opposed to the development of a perfect plan from the beginning. His conclusions are based on his own study, with a heavy

emphasis on the work of Peters and Waterman (1982), and, to a lesser extent, Charles Lindblom (1979). Empirical evidence is presented from his own case study research conducted at the Massachusetts Department of Revenue. Behn states there are thousands of management principles and it is never obvious which ones apply in a particular managerial situation. Consequently, the perfect plan cannot be developed in advance. Rather, as was the case in his case study, experimentation with and learning from various initiatives must take place - retaining the successes and dropping the failures as managers advance towards their goal. Behn rejected idealistic strategic planning in favor of what he terms strategic management. He acknowledged the link with Lindblom's "science of muddling through". He acknowledged also the influence of Peters and Waterman's "management by groping along" concept for effective management, a sequential process of adaptation in pursuit of a goal.

> In the terminology of control theory, management by groping along is a closed-loop control system; the feedback loop provides information on the behavior of the system that can be used to correct deviations from the desired path. Comprehensive planning would be an open-loop control system - there exists no feedback loop - and once started the system runs completely on dead reckoning (Behn, 1988, p.661).

Sanger and Levin (1992) analyzed more than 25 successful innovations and innovators and drew three principle lessons: (1) successful innovation does not spring from systematic policy analysis, nor is it generally a

revolutionary breakthrough. Successful innovation more often depends upon "evolutionary tinkering" (Sanger and Levin, p.91, 1992) with existing practices. It results therefore from a process of trial and error and experiential learning in the field. Its novelty arises from "the assemblage of old stuff in new ways" (p.102). (2) Analysis is more useful in shaping effective policy as it develops rather than in choosing between competing policies ahead of time. (3) Innovative public managers are entrepreneurial, they take risks with a bias towards action and a conscious underestimating of the bureaucratic and political obstacles their innovations face. Sanger and Levin concluded with prescriptions for how public managers ought to be trained and how they ought to behave. These are as follows: Innovations don't come "from scratch", but from "tinkering" - "using old stuff in new ways". Managers should depend more on analysis after rather than before a policy direction is chosen; they should analyze as policy develops. Successful innovators demonstrate the benefits of informal and experiential "wandering around" (Sanger and Levin, p.112, 1992).

Their research describes successful bureaucratic entrepreneurs. They conclude that the process of innovation is not neat and orderly as described by the policy analysis model, rather most effective and innovative initiatives derive from experimentation at the implementation stage.

"Evolutionary tinkering" is often the essence of the process. They state that policy is often actually made at the implementation stage. The data for their model of innovative managers came from 26 successful programs and agencies ranging over the last 20 years. Twenty two were winners of Ford Foundation awards for innovations in state and local government. They selected cases where there was a high degree of consensus among academics and management elites about their successful innovativeness.

To summarize, Sanger and Levin's conclusions are that: (1) innovations are not fundamental breakthroughs, (2) innovations are not the result of careful planning and analysis, (3) innovators can be trained. The required skills for success are not necessarily those of larger than life characters. Training should be shifted from prior analysis to operations management and management style, and should emphasize thinking big in terms of a mission, management techniques and organizational arrangements; as opposed to the narrowness of legal or economics training (Sanger and Levin, 1992).

Golden's (1990) paper examines 17 successful innovations in human services, broadly defined to include education, employment and training, and health. Golden purports that research offers 2 models - a policy planning model and a rapid action "groping along" model - for successful innovations in the public sector. She compares

the two models directly by examining the 17 case studies and tracing backwards the steps taken by the innovative managers. The cases suggest that the "groping along" model best fits the way that innovation came about in these programs. Innovative ideas typically were developed through practice, not through extensive planning. Programs began operating quickly and were repeatedly modified in response to operational experience. In short, the cases support Behn's prescriptions for practicing managers: to develop ideas quickly, try them out in action, and modify them over and over again. Golden concludes with some refinement of these prescriptions which she calls a Time-Phased Model of Innovation by Groping Along:

.develop a conception of the problem early, as opposed to full analysis of it

.build some consensus around that conception

.gather "craft knowledge" about the problem and agency capacity

.put together the minimal plans to get a specific idea implemented

.analyze results as they come in and adopt as necessary

In innovation by groping along, analysis is most valuable during implementation, instead of before, to allow the idea to emerge and develop. Golden concludes that less emphasis on skillful prediction and more on skillful learning is what works best.

The Life History of Innovations

Yin (1979) used a life history approach to examine

implemented innovations in municipal agencies. He did an in-depth examination of 6 technical innovations at 19 urban sites to assure a variety of settings and practices. Life histories were developed through case studies of these innovations at the 19 sites. Corroborating evidence was then provided through telephone interviews at 90 other sites. The innovations covered a span of 10 to 15 years.

Yin deliberately selected a sample of "old" innovations, and then traced their life histories through a "retrospective" study. He analyzed the life histories of the innovations in terms of either being a "passage" or a "cycle" event. He defined passage events as the transition from one organizational state to another, and cycle events as the survival over periodic organizational events. Having determined whether an innovation is marginally, moderately or highly routinized (by tallying the numbers of events attained), Yin proceeded to propose ten factors that facilitate routinization. He then analyzed the factors associated with routinization and with the varying levels of routinization. He found administrative and practitioner support, and the fact that an innovation is core to the organization, to be substantially related to whether or not it becomes highly routinized. His work is unique in providing a comprehensive study of the routinization process and a framework for examining the factors associated with the various degrees of routinization.

This type of study appears to have special value in analyzing the routinization process because it focuses on "events within an organization as it undergoes change" (Yin, 1979, p.375). Usually a number of stages are identified by researchers, for example, initiation, implementation and incorporation (Berman and McLaughlin, 1974); or unfreezing, change and refreezing (Lewin, 1958); or evaluation, initiation, implementation and routinization (Hage and Aiken, 1970). The general purpose of the research has been to identify desirable innovative behavior which promotes change-oriented organizations and, indeed, the major studies have attempted to identify the conditions which make the occurrence of change most likely, such as the existence of "performance gaps" (Downs, 1967, p.169); "slack resources" (Thompson, 1969, pp.44-45); and bureaucratic self-interest (Blau, 1955); and the role of change agents (Bennis, 1966) who are responsible for instigating changes via training programs and methods of attitudinal adjustment.

Overview

O'Toole's recent work is useful in providing an overview on the state of research (O'Toole, 1986). It is a qualitative examination of the field as reflected in its published product. The data for analysis are the literature itself. The sample examined more than 300 articles covering almost all major fields of policy and most of the prominent

works in the literature. O'Toole's findings are that researchers do not agree on the outlines of a theory of bureaucratic innovation, nor even on the variables crucial to success. It remains true that the field, thus far, has a strong inductive orientation, with numerous case studies. An examination of the material indicates that there seem to be possibilities for building some convergence in the field, but thus far little cumulation has actually taken place. Roughly half the studies identify policy characteristics (especially clarity and flexibility of goals and procedures) as significant; approximately the same number claim that resources (financial and other) are crucial. Other frequently employed categories of variables include: implementing-actor or multi-actor structure, number of actors, attitudes and perceptions of implementing personnel, alignment of clientele, and timing (including the possibilities for learning among implementors)" (O'Toole, 1986, p.189).

Eight research questions are most often posed in the literature: (1) Are innovations more likely to be fully routinized if the innovation is applied to a core application rather than to a peripheral function of the agency (Berman et al., 1975)? (2) Is an innovation which faces an internal, active adversary group less likely to become highly routinized, (Yin, 1979)? (3) Are demonstrated service payoffs associated with high routinization? The

more clearly an innovation has demonstrated service payoffs, even in subjective terms, the more likely that the innovation will become routinized (Berman et al., 1975). (4) Is an innovation that comes about because of clearly established "prior need" (either a crisis or emergency, or a simple chronic and gradually eroding situation) more likely to become fully routinized (Yin, 1979)? (5) Does strong and sustained community support/client support for an innovation have a positive effect on routinization, (Costello, 1971)? (6) Is upper level administrative support in evidence and associated with the degree of routinization of the selected innovations? The importance of support from agency administrators (regardless of the style of upper management) is often cited (Tansik and Radnor, 1971; Costello, 1971; Bingham, 1976). This is especially important as an innovation becomes routinized (Lambright and Flynn, 1977). (7) Is a single, active innovator likely to be associated with high routinization of the selected innovations? The importance of such a person in gaining routinization for an innovation has also often been cited in the literature (Rothman, 1974). This person often initially organizes staff training and orientation activities. More recent literature describes this key actor as entrepreneurial, with a non-rigid style of management (Golden, 1990; Behn, 1988). (8) Is open and regular communication among all staff associated with successful

innovation routinization, (Rein and Rabinowitz, 1977), or are practitioners viewed more as impediments to be manipulated by management? Is innovation more likely to become fully routinized if it has greater support from the practitioners within an agency, (Yin, Heald, Vogel 1977)? Researchers should continue to build systematically and cumulatively on the research that has focused on these areas.

This particular research is guided by organizational change theory. The organizational change framework attempts to examine events over time in specific organizations. Since the onset of research on the innovative process, many works have sought the crucial variables in the implementation and routinization of innovations. This study focuses on what Becker and Whisler (1967) call "internal inputs" to identify the factors proposed to be facilitate the full routinization of innovations. The study settles on the propositions employed by Yin in his 1979 study, because they encompass a wide range of variables that have arisen again and again since the shift from the study of the diffusion of innovations to the study of the innovation process, namely: core application; group competition/conflict; service payoffs; prior need; support from practitioners, community, and administration; and innovator coordination. The study is further based upon Yin's work, in that it employs his passages and cycles

framework to determine a routinization level for each selected innovation. The study differs from Yin's in that a variety of types of innovation will be studied (administrative, service and technical), and that all of the innovations are from within the same organization. Like Yin's innovations, those selected were non-strategic, and each had a behavioral component.

A rich and diverse body of literature exists on the topic of innovation. Rogers (1983), found 3,085 studies in his extensive review of the literature. The current research has moved beyond the discussion of mere adoption and diffusion to further stages - the implementation and institutionalization of an innovation. Downs and Mohr (1976) hold that these stages involve two different kinds of behavior and should be studied separately. Yin (1979) referred to the "life history" of an innovation - the tracing of the story of an innovation from the point of adoption to a point where it has more or less disappeared as an innovation and is regarded as an integral part of standard practice. He outlined how an innovation that has been integrated into standard practice has generally passed through three phases of change:

1. Initiation and adoption, for example pilot testing
2. Implementation, for example, widely-spread, training.
3. Routinization, viewed as part of common services routinely provided - no longer an innovation.

This study will focus on the routinization stage viewing the case histories of 9 innovations in Norfolk Public Schools in Virginia.

Chapter III

Design of the Study

The Units of Analysis

The units of analysis are existing innovations in Norfolk Public Schools, Virginia. Table 2 details the actual components and site of each innovation, identifies key actors selected for interview, specifies the date when the innovation was introduced and, finally, lists the documents already known to exist that, together with the interview notes, make up the research database. The data gathering for all cases was conducted during the first six months of 1993.

Routinization and Passages and Cycles

Yin's work provides the framework for this study. His passages and cycles model allows for classification of innovations according to level of routinization (based upon the achievement of 10 organizational events: budgetary, personnel, training, organizational and maintenance). It allows for a detailed study of the routinization process. The routinization process has not been analyzed in detail since Yin's effort, and the relevant issues therefore have not been defined. Table 3 summarizes the events which were the subject of study in determining the level of routinization for each of the innovations. These make up the passages and cycles framework described by Yin (1979).

Table 2

Innovations Selected For Study

Innovation	Key Actors	Components	Relevant Documents
Automated Library, 1985	Director & Coordinator of media; Director of Budget	Automated library using network to search catalogs, modems to search outside libraries	Info. paper to principals & prog vendor doc. & memos
NORSTAR Gifted Prog. 1986	Director of Gifted Progs, NORSTAR project manager	A "research Institute" for gifted students housed at Norfolk Project Technical Center, using variety of technologies in a laboratory	Yearly Progress Reports, Docu-mentation, weekly reports
Coronado Alternative School 1970	Principal, Director of Research	An alternative school for pregnant teens	Original Proposal, Yrly Rpts.
Norfolk Skills Center 1963	Director, Job Developer, Director Adult Education	9 teachers, 2 counselors, 2 secretaries. training progs in Autobody, automechanics, and other areas.	Contract w/ S.E. VA Job Train Admin., Contract w/ VA Div Emp Train
Student Information System 1987	M.I.S. Director Project Leader	mainframe computer relational database on all students, terminals at schools & admin	Feasibility Study, Journal article, *DPAC minutes, RFP.
SERVICEMASTER Custodial Services 1990	Budget Director, Director School Plant, Director accounting, Local 52 Union representative (AFLCIO)	Private/Public part'ship in providing custodial services at all schools. Provides training, consultat/supplies	RFP & Response, Contract, memos overview to supt.
Financial & Human Resources Management System 1986	Director FMS, M.I.S. Director, Budget Director, Payroll Coordinator, Dir. Accting	Mainframe computer software, & terminals throughout the system	Implementation Plan, RFP & response, Vendor Proposal, *DPAC minutes.
Electronic Mail System 1988	M.I.S. Director Guidance Coord., Asst Supt Elementary Schools,	Computer software & terminals throughout the system	Planning Document, Office Automation Study
Special Educ. Parent Resource Center 1987	Special Ed. Dir., Budget Director, Parents, Spec.Ed. Staff dev. Coord.	Training/ Meeting/Other Facility at Stuart School	Proposal, Memos, Pamphlets, Manuals.

Research Questions

Three basic research questions are posed in the present study: (1) How do innovations become routinized in an urban school system? (2) Why do some innovations become more highly routinized than others in this school system? (3) What are the factors which facilitate routinization? The research questions lead to propositions about the factors associated with the incorporation or routinization of innovations, and these propositions served as a guide in gathering relevant evidence.

Statement of Propositions

The following eight propositions were examined:

1: Fully routinized innovations exhibit clear and established prior need.

2: An innovation is more likely to become routinized if it is applied to a core rather than peripheral function of the agency.

3: An internal, active adversary group competing for resources is negatively associated with the routinization of an innovation.

4: The more clearly an innovation has demonstrated service payoffs, the more likely that the innovation will become routinized.

5: Strong community/client support for an innovation has a positive effect on routinization.

6: An innovation is more likely to become routinized if it exhibits widespread practitioner benefits, with regular and open lines of communication at all levels.

7: A single, active entrepreneur who promotes the innovation is associated with its routinization.

8: Upper-level administrative support is positively associated with the routinization of an innovation.

The propositions were examined after gathering qualitative data using detailed, semi-structured interviews with the key actors identified for each innovation. This data, together with that taken from the relevant documents, was used to write the case study reports. The semi-structured interview instrument is contained within the case study protocol.

Table 3

Passages & Cycles Related to Routinization (Yin, 1979, p.63)

Resource Type	Passages	Cycles
Budget	Innovation moves from soft to hard money	Survives annual budget cycles
Personnel	Functions become part of job descriptions or prerequisites	Survives intro of new personnel and/or leaving of key personnel
Training	Skills become part of professional standards, curriculum	Skills taught during ongoing or regularly held training cycles
Organizational governance	Use of innovation becomes part of statute, regulation, manual etc.	Attainment of widespread use
Supply and maintenance	Supply and maintenance provided directly by school system	Survives equip. turnover

Selection Criteria

All innovations were selected from the same organization. This was done in order to minimize threats to internal validity in determining the level of routinization

for each innovation. For instance, if an innovation has a job description associated with its introduction (a Yin "passage" for measuring routinization level) and another innovation does not, it can be stated with greater confidence that the innovation is more highly routinized. However, if each innovation was selected from a different organization, it could be that one organization's personnel department is simply more thorough than the other in producing such job descriptions. Similarly, for all of the other Yin passages and cycles, the reason for the status of an innovation is more likely to be circumstantial if the innovations are chosen from different organizations.

Selection of the innovations for study was determined by discussion with an expert panel comprising: the school system's assistant superintendent for elementary schools, the coordinator for instruction and curriculum management, senior director of management information systems, director of budget, personnel coordinator, and coordinator for research and statistics. These key administrators were able to provide written information on all existing innovative programs in the school system: instructional, technical and administrative.

Table 4 provides a full listing of all "innovations" on which information was gathered. The following criteria were then employed to select the innovations for study:

(1) The innovation was more than an enhancement of existing

programs but rather existed clearly in isolation from other

Table 4
Innovations in Norfolk Public Schools

Innovation	Reason Rejected/Selected	Type
The automated school library system	**Selected**	**Technical**
Norstar Gifted Program	**Selected**	**Service**
Coronado Pregnant Teens School	**Selected**	**Service**
Norfolk Skills Center	**Selected**	**Service**
Automated Student Information System	**Selected**	**Technical**
Special ed Parent Resource Center	**Selected**	**Service**
Servicemaster Custodial Services	**Selected**	**Admin.**
Financial Management System	**Selected**	**Technical**
Electronic Mail System	**Selected**	**Technical**
Chesterfield Hghts Project	enhancement	
Multicultural education	non-incremental	innovation
Neighborhood Schools Plan	non-incremental	innovation
Drug Ed. Program	enhancement	
Accelerated Learning	enhancement	
Monroe/ODU Cooperation	enhancement	
Switch to self-insurance	no behavioral	component
Upgrade computer communications	no behavioral	component
Switch to school bus purchase	no behavioral	component
Switch to telephone purchase	no behavioral	component
Intro of flexible Benefits	no behavioral	component
Tech Prep & other voced progs	enhancement	
Willard Model School	enhancement	
Reading To Learn	enhancement	
Writing To Learn	enhancement	
Applied Communications	enhancement	
Multiple Health & P.E. Progs	enhancement	
Wellness Day	recent	
SMART Program	recent	
Mentor Program	recent	
Multiple Staff Development Prog	enhancement	
Voc.Ed mini grants	enhancement	
Voc.Ed. Technology Islands	enhancement	
Careers and You	enhancement	
Innovative progs. in C.A.I.	enhancement	
Innovative Art Ed. Progs.	enhancement	
Innovative Math Progs.	enhancement	
Innovative Science Progs.	enhancement	
Innovative Foreign Lang. Progs.	enhancement	
Innovative business ed progs	enhancement	
Innovative guidance progs	enhancement	
Innovative social studies progs	enhancement	
Madison Career Center	recent	
Communication Skills portfolios	enhancement	
Comer Model	enhancement	
H.O.T.S. Program	enhancement	
EFE/WECEP Programs	enhancement	

Dropout Retrieval Prog	enhancement
Various AT-RISK progs	enhancement
Young Park enhancement prog	enhancement
School Based Management	recent
Staff development innovations	enhancement
LD co-teaching model	enhancement
Easton Preschool	enhancement
Spec. Ed. teacher Learning Ctr	enhancement
TMR Systems Change Project	enhancement
Other special ed programs	enhancement

programs (it had distinct boundaries or components that separated it from other enhancements and activities).

This allowed for focused study of the innovation and its degree of routinization and eliminated almost all instructional programs.

(2) A significant behavioral component was required; that is, the innovation involved interaction between the innovation and people. This eliminated many innovative ideas, such as, the purchase of new phones, upgraded communications equipment, flexible benefits.

(3) The innovation was one introduced at the administrative rather than the policy level. Cummings and Huse (1985) differentiate between "incremental" and "strategic" innovations. Incremental changes "occur within the organization's existing .....strategy and culture, and are aimed at improving the status quo" (Cummings and Huse, 1985, p.56). Strategic changes are intended to alter significantly how the organization operates. For this study, an innovation was operationalized as one introduced by the school system's upper administration, rather than by the school board. Innovations introduced by the school board were deemed to be "strategic". This eliminated, for instance, the Neighborhood Schools Plan and associated multicultural education program. Zaltman (1973) also

classified innovations as "major" and "minor". Similarly, March and Simon (1958) distinguished between "routine" and "non-routine" innovations.

(4) The innovation must have been adopted after 1962 (30 years ago), and no later than the 1990 school year. It was felt that, for more recent innovations, it would be too soon to rule on their degree of routinization and that, for innovations older than 30 years, the "life history" would be difficult to reconstruct.

Application of these criteria thereby operationalized an innovation as "an existing program or service considered innovative by the school system that was at least 2 years old but not older than 30 years, existing clearly in isolation from other programs, incremental rather than strategic in nature, and with a significant behavioral component".

The following 9 innovations were deemed to have met the selection criteria:

the automated school library system - at all schools
Special education's Parent Resource Center - Stuart Center
the NORSTAR program for the gifted - at technical center
the CORONADO pregnant teens program - at Coronado school
the Norfolk Skills Center - at 21st Street Norfolk
the automated student information system - all schools & MIS
the SERVICEMASTER custodial services arrangement - all sites
the automated Financial Management System - all sites
the electronic mail system - all sites

It was decided that all of the nine innovations should be included as cases for the study.

A pilot study was conducted to reveal possible

inadequacies in the initial design and in the interview instrument. The pilot case study helped in refining data collection plans with respect to both the content of the data and the procedures to be followed. The pilot phase also included preliminary contact with key actors involved with the selected cases. Yin states that "this is an appropriate and desirable use of pilot studies" (Yin, 1984, p.59). The pilot study was conducted during the last two weeks of September, 1992. It concerned the drug education program managed by the department of health and physical education which was selected at random from those innovations not chosen for study. Key actors were interviewed and the pilot resulted in many changes in the wording of interview questions, the addition of new questions, and the deletion of some of those originally planned for inclusion in the research protocol.

The Case Study Method

The study employs a multi-case design, thus each selected innovation is an individual case study, and the study as a whole can be considered a "comparative" (or multiple case) post hoc longitudinal design. Multiple case designs have distinct advantages in comparison to single case designs. "The evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust" (Yin, 1984, p.53). Yin (1979) considers multiple case studies as one would

consider multiple experiments, that is that they follow a replication logic. The research design is, therefore, one in which the same results are predicted for all of the cases, and if this occurs replication may be said to have taken place.

The selection of cases came from theory, and data collection was conducted following a formal research protocol. Having gathered all data pertinent to one case, that case study first was written following a standard report format outlined in the research protocol. Such data collection and reporting strategies were repeated for all of the cases. When the case reports were written, the researcher then engaged in cross-case analysis in order to draw conclusions and affirm or modify the theory prompting the research. An outline of the case study methodology is illustrated as Figure 1.

The Case Study Protocol

A case study protocol was developed and followed in this study. A case study protocol is more than just an instrument, but also details the procedures to be followed in using the instrument. Yin considers it essential to a multiple case design. "The protocol is a major tactic in increasing the reliability of case study research..." (Yin, 1984, p.70). The protocol has the following sections (it is included as Appendix A):

. Guidelines for site visits: letter of introduction and request for participation, procedural reminders, a clear schedule for data collection activities.

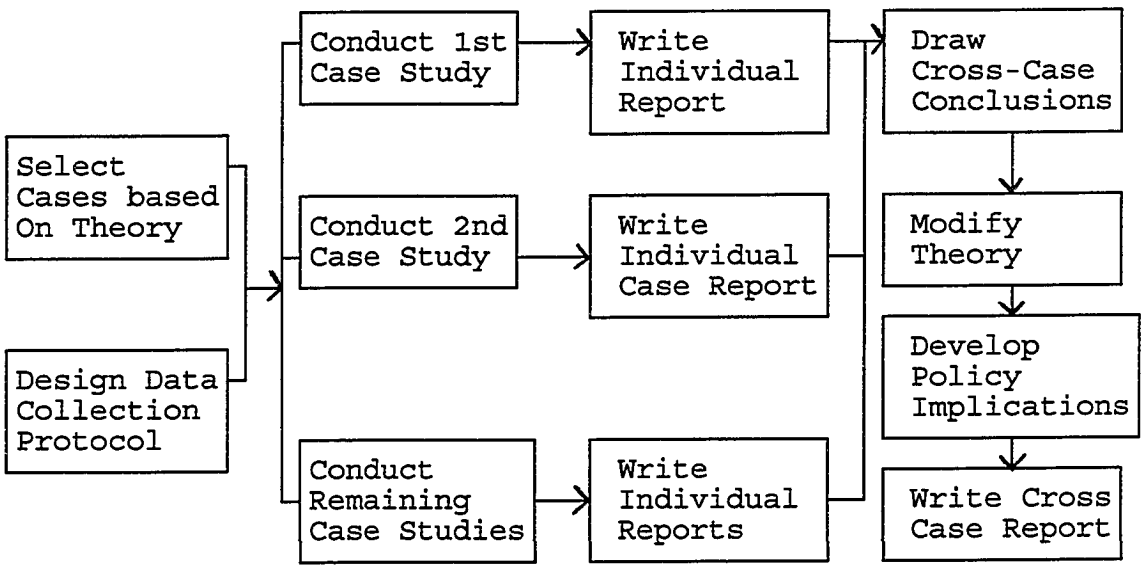
. Interview questions: the specific questions that the investigator must keep in mind in collecting data; "table shells" as suggested by Miles and Huberman (1984) for specific arrays of data.

. A guide for the case study report: outline and format for the report narrative.

A case study protocol helps prepare for a high quality case study that can be replicated by other researchers.

Figure 1

The Case Study Method (Yin, 1984, p.56)



Chain of Evidence

A chain of evidence was built by carefully following a series of steps in collecting the evidence. Yin's passages and cycles framework guided the collection of evidence, in an effort to determine if and when the various passages and cycles had occurred. Also, questions were asked of key actors about the factors proposed to facilitate routinization. The use of the case studies followed an explicit chain of evidence:

(1) The data collected on-site was dictated by the case study protocol interview guide covering three general topics (background and description of the innovation, status of routinization, and reasons for routinization status); and by Yin's passages and cycles framework for determining the level of routinization.

(2) A uniform report format was employed to write the case study reports. The reports consist of parallel types of information based on the three general topics outlined in the protocol.

(3) The narratives were then analyzed according to the key events that had occurred.

(4) A table of events was drawn directly from the case study narratives and represents the next step in the chain of evidence from the case studies. The events in the table represent the raw data used in tabulating the passages and cycles achieved by each innovation, and therefore the key

passages and cycles of each life history are indicated by a "P" or "C" in parentheses in each report. These codes refer to one of the 10 passages and cycles employed in the study. The coding allows the reader to directly follow the chain of evidence concerning level of routinization from case study reports to table of events to findings.

Data Collection

Data was collected from two sources. One source was written documents and materials for each of the innovations, which are listed in Table 2. Only documents making a direct or indirect reference regarding one of the cases of innovation were selected. These were primarily memos, formal reports and newspaper articles. The second source of data consisted of interviews with those participants involved with, or having information about, the innovations selected for study. Key actors were easily identifiable for each innovation. Usually, it was the director of the department. Interviews were also conducted with at least one practitioner for each innovation. These persons were selected at random, employing the simple procedure of alphabetically ordering those five innovations that were system-wide (automated library, e-mail, financial management system, servicemaster, and student information system) and also arranging all sites in an alphabetical listing.

The practitioner to be interviewed for the "first"

innovation was simply the person working at the "first" site in the alphabetical list. The practitioner selected for interview for the "second" innovation was that person employed at the "second" site. Similarly, for the four innovations at only one site (Coronado, Norstar, Skills Center and the Special Education Parent Center), it was decided to interview the practitioner whose last name was "first" on an alphabetized listing of practitioners for that site. These interviews were conducted in person during semi-structured, intensive on-site visits. Interviews were also conducted with others "suggested for interview" by those originally selected. Such interviews were done on the telephone. For example, if a practitioner stated: "I like the new way of doing things but those working at the high schools think it has meant more work for them", then a telephone interview was conducted with at least one high school practitioner. The interview questions are included in the case study protocol (Appendix A). Parts I, II and III of the interview were employed with the key actors. Only Part III (Reasons for Routinization) was used as a source of questions for practitioner interviews.

These case-study examinations of the routinization of innovation were guided by qualitative research methods as defined by Yin (1984). The approach consists of analyzing objective data sources (documents and reports), intensive interviews, and on-site observations. This allows the researcher to consider the research questions from different sources, thereby minimizing bias and

error. Further qualitative data analysis was conducted employing methods developed by Miles and Huberman (1984).

Data Analysis

The foremost approach to analysis of the data was employment of a "general analytic strategy" (Yin, 1984). More specifically, this involves relying on the 8 theoretical propositions which were based on the research questions and the basic conceptualization of the study. These propositions shaped the data collection and thereby guided the case study analysis. Clearly the propositions helped to focus attention on certain data in analyzing appropriate causal links. The data analysis was guided initially by Yin's framework for determining the level of routinization of innovations (which allows for quantification of descriptive elements) , outlined in Changing Urban Bureaucracies , (Yin, 1979). It identifies ten "passages and cycles" - specific organizational occurrences that are observable and that, when tallied, reflect the status of a program within the organization. The degree of routinization of the nine innovations was summarized in terms of a routinization score and then a rating based upon the score. These ratings are also derived from the Yin model outlined in Changing Urban Bureaucracies (Yin, 1979). The score is a simple count of the passages and cycles achieved by each innovation. An innovation's score placed it in one of three descriptive ratings: highly routinized, moderately

routinized and marginally routinized. The three ratings were based simply on a three way division of the total number of passages and cycles:

7 to 10 is highly routinized
4 to 6 is moderately routinized
0 to 3 is marginally routinized.

The results were summarized in appropriate descriptive tables and in the case study narratives.

A second general analytic strategy was to develop a descriptive framework for organizing the case study. Each case was described following the order of topics listed in the case study protocol (that is background and description, status of routinization, and reasons for routinization status. See Appendix A). Eight factors were proposed to facilitate routinization. Following the descriptive narratives of the life history of each innovation, these 8 factors were examined for each of the nine case studies. Since the data collected was of a nominal or ordinal type, no attempt was made to employ inferential statistical analysis; rather case study evidence was analyzed qualitatively, employing the techniques outlined by Yin (1984), and by Miles and Huberman (1984).

Miles and Huberman (1984) suggest various cross-site techniques such as: putting information into different arrays, creating data displays (flowcharts for example), tabulating the frequency of different events, and examining the complexity of such tabulations and their relationships by calculating second-order numbers such as means and variances.

This study employs 3 of them. Their view of qualitative data analysis involves three concurrent flows of activity: data reduction, data display, and conclusion drawing / verification. They suggest standardizing cross-site data via common codes, outlines and reporting formats for each case. These are all data reduction techniques. They also suggest meta-matrices (or master charts) assembling descriptive data from each of several sites in a standard format (such as the table of events employed in this study) for display and analysis.

More specifically, Miles and Huberman describe site-ordered descriptive matrices, site-ordered predictor outcome matrices and scatterplots. All of these were employed in analyzing the data and in testing the 8 stated propositions.

A site-ordered descriptive matrix contains descriptive data from all sites, but the sites are ordered according to the main variable being examined, so that one can see the differences among high, medium and low sites. Such matrices were employed in describing the relationship between "degree of routinization" and (1) the innovation's service payoffs, and (2) upper-level administrative support for the innovation. Other cross-case techniques were employed for the other factors.

A predictor-outcome matrix arrays sites on a main outcome variable and provides data for each site on all the main antecedent variables that the analyst thinks are the most

important contributors to the outcome. The basic principle behind the matrix is explanatory, rather than merely descriptive as with the site-ordered descriptive matrix. The analyst wants to see whether these antecedents predict or account for the criterion variables. Such a site-ordered predictor matrix was created to analyze the relationship between all 8 factors proposed to facilitate routinization and the dependent variable, degree of routinization. Site ordered predictor-outcome matrices allow one to see how several contributory factors function together in relation to different levels of a criterion measure.

Scatterplots are figures that display data from all sites on two dimensions of interest that are related to one another. A scatterplot was created to illustrate the respective relationships between degree of routinization and administrative support. Data from sites was first carefully scaled and laid out in the space formed by respective axes, so that some determination of similarity and contrast can be made. Scatterplots are a good way to "see" all the cases in two dimensional space.

Validity and Reliability

The study has construct validity, that is the measures used validly reflect the concept, because what constitutes degree of routinization is operationalized clearly prior to collection of data. Additionally, construct validity is

strengthened by the collection of multiple sources of evidence. These include the notes from interviews with key actors, the data collected from the interviews to determine degree of routinization, minutes from administrative meetings, planning session documents, feasibility studies, responses to RFP's, the original innovation proposals etc. Furthermore, key informants were allowed to review the relevant draft case study reports, with their feedback then included as necessary in the final reports.

Conducting a comparative case study of nine innovations within the same school system does increase the level of validity for the study because the innovations are subject to roughly the same environmental factors, and the identity of the main authorities (same city council, school board, administration etc.) makes it more likely that differences can be imputed to the stated propositions than to other unspecified factors which might account for differences if innovations from different school systems were being studied.

This study has low external validity in terms of being transferable and generalizable to other settings and populations. Because of the wide variation in conditions between urban school districts, the findings of this study have a low degree of transferability. The study also has low generalizability because of the potential extraneous and intervening site conditions which may affect the routinization and which may not be controlled for in the study.

"Single case studies offer a poor basis for generalizing" (Yin, 1984, p.43). Multiple case studies, as with experiments, generalize to theory - they rely on "analytical generalization". The innovation and change theory that led to the first case selection is the same theory that helps identify the other cases selected - to which the results are generalizable. In short, if a theory concerns the level of incorporation/routinization of an innovation, the procedure for selection of cases for study will have identified those programs/services considered innovative and somewhat "incorporated" into the school system.

Although this study is limited in the sense that its findings are not widely generalizable to other implementation situations, it possesses value in being generalizable to innovation theory:

> Case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a "sample", and the investigator's goal is to expand and generalize theories (analytic generalization) and not to enumerate theories (statistical generalization) (Yin, 1984, p.21).

By comparing the actual routinization experiences in the nine Norfolk Public Schools' innovations with those which would have been expected according to the literature, support or non-support for the literature is derived from the study. By drawing conclusions about which factors seem to explain the degree of routinization, greater insight into the innovation process within an urban school system is

possible and assists the development of innovation theory.

Reliability is ensured by use of a case study protocol. The objective is to ensure that another researcher can replicate the study by repeating just what you have done. Reliability is achieved by repeating the same case study, using the same instruments and procedure, and getting the same results the second time. A good case study protocol allows for reliability, because explicit guidelines are given for the gathering and analysis of data, allowing replication. This was done for this study. Yin's technique of "pattern-matching", comparing an empirically based pattern with a predicted one, was then employed. Specifically, pattern-matching was implemented by employment of Miles and Huberman's cross-site matrices. By identifying patterns across cases, the goal is to identify all reasonable threats to validity and to conduct repeated comparisons in an attempt to demonstrate that such threats to internal validity cannot account for the patterns in all of the cases, but rather that the patterns may be related to the dependent and/or the independent variables of study. The dependent variable is degree of routinization and the independent variables are the factors proposed to facilitate routinization.

A summary table of events was prepared to show the passages and cycles achieved by each innovation and its current routinization standing. In summary, a chain of

evidence from data collection instrument to narrative case-study to a table of events and finally to general findings was followed with the goal of employing a methodology that is easily replicable. Maintaining a chain of evidence increases the reliability of the information in a case study.

Chapter IV presents the 9 case study reports.

CHAPTER IV

Case Studies of Innovations

Introduction to the Case Studies

This chapter contains the nine case studies developed from examination of relevant documents, site visits and interviews with key actors. Each case study has been reviewed by the departments responsible for each innovation.

Each case study in this chapter follows the same basic format from the fieldwork guidelines (see the research protocol described in Appendix A). For each innovation, "Section A" describes the background and the nature of the innovation, "Section B" covers the current status of routinization for the innovation (i.e. passages and cycles as described in Chapter 3), and "Section C" reviews the eight propositions that had previously been given as possible reasons for routinization status (again, see Chapter 3). The occurrence of passages and cycles are coded with the symbols [P] and [C] within each case study, and summary tables of events follow each report.

Such a standard outline allows for aggregate case analysis by facilitating comparisons across cases. All case studies were conducted during the first six months of 1993.

CASE 1: ELECTRONIC MAIL (E-MAIL)

Persons Interviewed:

Senior Director Management Information Systems
Pupil Attendance Analyst
Assistant Director Management Information Systems
Directors of guidance; personnel
Multiple users
Asst Supt Elementary schools
Several principals

Section A: The Background

In 1985, the Norfolk Public Schools' director of data processing retired after 25 years of service. At that time the department operated strictly in a "batch" mode (punched cards were punched on-site in central office from source documents delivered from throughout the school system, and computer programs which accessed these card files executed on a regular schedule to produce reports and update school system files). There were no "on-line" applications, (allowing remote data entry and "inquiry" of files) of any kind. In 1985, a new director was hired with the mission of modernizing the department. The department, now called Management Information Systems (M.I.S.), currently has 26 employees and an operating budget of $1.3 million.

One of the first undertakings of the new director was to arrange an office automation study for the school system in conjunction with IBM. An initial planning session involved upper level administrators from central office and the schools and the result was a document entitled the Norfolk Public

Schools' Office Automation Study. Prominent in the report (as a solution to internal communications problems) was an IBM product PROFS - an electronic mail system. Problems in making contact with individuals not at their desks (playing "telephone tag") was the number one office automation complaint of principals in the schools. PROFS, however, was never funded, being ignored by upper level administration for several years due to a feeling that at $45,000 it was too expensive.

The senior director of M.I.S. proposed a low cost electronic mail system called WIZARD MAIL, as an alternative to the comparatively expensive (and rejected) IBM PROFS. The product cost only $575 (with a $1,000 annual maintenance fee) and was immediately acceptable to administration. The software resides on the Norfolk Public Schools' mainframe computer in central office and can be accessed by all departments and all schools. Originally, only the secondary schools were "online" to the central office computer, but the elementary schools were added in 1989. The product is easy to use, although some training is required. It allows users to receive "mail" at their computers (which can be sent by any other computer user at any site, at any time of day), and to send mail to any individual user or to groups of users (e.g. all guidance counselors, principals, directors, the superintendent's cabinet etc.).

The current senior director of M.I.S. was the initiator

and main supporter of the E-Mail system. Other main supporters were the director of guidance (because all secondary guidance counselors had on-line computers) and the then director of instruction (now assistant superintendent of elementary schools) who long has promoted the ideal of "the paperless office".

Section B: Status of Routinization

Budget

A general-purpose fund provides all the money currently used in connection with E-Mail (the E-Mail software cost $575 in 1987 and costs $1000 in annual maintenance). All charges for central processing unit (CPU) processing time are absorbed by the management information systems group, i.e. it does not charge other departments for the service it renders. Terminals and computers that have been purchased for access to the mainframe computer are part of a general equipment category that includes typewriters and other standard office machines.

The innovation is considered permanently and fully funded (from local funds) by the senior director of management information systems [P]. This occurred after the senior director worked with the guidance department on a pilot of the product. The response to an informal survey on whether or not the product should be retained was a resounding 'yes'. The system is now considered an integral part of

the organization and has been funded annually since 1987 [C].

Personnel

No full-time personnel are involved in operating the innovation, although it has resulted in additional duties for the customer support manager, assistant director, and operations staff. The e-mail support has been added to the manager's job description [P]. Approximately 400 practitioners use E-Mail but its use is not specifically written into the their job descriptions. The customer support manager position turned over in 1989 and the transition to a new trainer was smooth [C]. A support technician was added to assist the customer support manager in October 1992 and E-Mail duties were written into her job description [P] [C]. The assistant director informally serves as the E-Mail administrator.

Training

Start-up training is provided once per month and is required (getting a password for the system is dependent upon completing the training). Training is on the job (internal) and was begun in 1988 [C]. No formal curriculum exists for this training, nor have the skills become part of professional standards or certification requirements [P].

Organizational Governance

While the use of the innovation is not officially part of

statute, regulation nor procedures, the assistant superintendent for elementary schools has ordained that he will not accept written material from elementary principals if it can be transmitted electronically and has directed that all elementary principals have computers on their desks [P]. The innovation has reduced the number of informal memoranda sent back and forth, and its use is widespread (all 60 sites) and frequent (determined by monthly M.I.S. department printouts showing usage, and by the mainframe message buffer being increased in 1990 to allow 99 users simultaneously (from 50 at the innovation's introduction in 1987), and with a further increase about to be enacted. The level of use has grown as the number of terminals has increased in the school system (for example to all elementary schools) [C].

Supply and Maintenance

Software maintenance is paid annually ($1000). Mainframe computer equipment is maintained by a long term contract with a local company, whereas personal computer equipment is maintained internally by the school system electronics personnel [P]. The innovation has endured upgrades of both the mainframe computer hardware and its operating system [C].

Section C: Reasons for Routinization Level

1: Prior Need/Crisis Condition

E-Mail did not emerge because of any crisis, but was

purchased as an enhancement to administrative operations in the district. It was purchased when the budget was not as tight as now and when school personnel felt such expenditures were a worthy use of available funds. The concept emerged from a school system planning session on the topic of office automation. The sessions were hosted by IBM and resulted in what one top administrator described as "nothing more than a wish list".

2: Core Application

There is little doubt that electronic mail is not a core application (as are payroll and accounting for instance) although it certainly supports many core functions. It is not core because it does not directly relate to the required instructional program, nor is it a non-optional service offered by the school system.

3: Competition

There has been no competition with any other department concerning electronic mail, apart from attempts by the budget director at the time of adoption to opt for a telephone voice-mail system (the budget office is responsible for managing the school system's phone service). The E-Mail was more appealing due to its low cost and the fact that on-line equipment was already in place at all secondary schools and throughout central office. The budget director's support for voice-mail was not strongly supported by others, due to the costs for additional hardware and software. The budget

director soon supported E-Mail after its adoption.

4: Service-Related Payoffs

All respondents cited big savings in time spent communicating with others - especially in the ability to communicate with groups e.g. all principals, all directors. They also mentioned the breakdown of hierarchical barriers, with the exchange of mail directly from and to the superintendent, assistant superintendents, high school principals being commonplace. Fewer phone calls and messages, no copying of informal memoranda nor stuffing and addressing of envelops were other cited payoffs.

5: Client/Community Support

Since students do not use the administrative computer system, there is no opportunity for widespread client support. For the most part, the community is unaware of the system's E-Mail and therefore could not actively support.

6: Practitioner Support

There is good communication between management information systems and the E-Mail practitioners. Management information systems uses the system itself to instruct in enhanced applications of the product, time-saving tips etc. The customer support manager and assistant director hold monthly meetings with key computer users at each school (a users' group). Most principals see the benefits of E-Mail. Central office administrators certainly do, as they more often communicate with groups of principals, and therefore it is a

big time-saver. Some principals initially ignored the innovation, and a few continue to do so, but the system is fully established due to the upper administrative support of the current administration who, having seen the ease of its use and obvious benefits, insist on its use (reluctant principals have simply had secretaries read their E-Mail and respond to messages for them). At the onset, presentations promoting and informing all of the innovation were made to the superintendent's cabinet, and at an administrators' conference.

7: Active Innovator

If any individual were to be singled out as an innovator with respect to E-mail it would be the current senior director of M.I.S. He assumed the role of finding an alternative, affordable E-Mail after the IBM product recommended in the office automation study had been ignored for several years, and has provided support services such as training. He was the one who piloted the project with a known supporter, the coordinator of guidance, in a setting with high likelihood for success. The current assistant superintendent for elementary schools was a strong supporter who demanded of his principals that they use the E-Mail product.

8: Upper Administrative Support

While most administrator's were disinterested at the adoption of E-Mail, they almost exclusively now support it. And this is demonstrated by the level of usage. There is

100% usage by site in the school system (60 sites). The senior director of M.I.S. readily admits that top administrative support, while neutral at the launching of the innovation, quickly became the key to its success and incorporation.

Summary of Passages and Cycles Attained (E-Mail)

[P] Full and permanent funding	+
[C] Survives annual budget cycles	+
[P] Duties included in job descriptions	+
[C] Survives personnel turnover	+
[P] Curriculum/certification required	0
[C] Training cycles exist	+
[P] Required by statute/regulation	0
[C] In widespread use	+
[P]Maintenance performed internally	+
[C] Survives equipment turnover	+

8 out of 10 = HIGH routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	0
Core function	0
Competition/rivalry	+
Service payoffs	+
Community/client support	n/a
Practitioner support	+
Single, active innovator	+

Administrative support +

Summary

E-mail is fully and permanently funded and has survived all budget cycles since its adoption. E-mail duties are formally incorporated into the job descriptions of the customer support technician and the support technician, and the innovation has survived the turnover of the original customer support manager, who was promoted to another department, and the hiring of a new support technician. Ongoing training exists for the innovation, but no formal curriculum has been developed. While not required by any statute or regulation, electronic mail has attained widespread usage in the school system. Maintenance of equipment is performed internally, and the innovation has survived turnover of the mainframe computer and peripheral devices. With 8 out of 10 passages and cycles, it is considered highly routinized.

The innovation lacks internal competition and rivalry and has demonstrable service payoffs in that all those interviewed reported considerable savings in time spent communicating with others in the organization. It has both administrative and practitioner support and was adopted and implemented by the current director, the innovation's single, active innovator.

CASE 2: SERVICEMASTER

Persons Interviewed

Director of School Plant
Norfolk Public Schools Assistant in School Plant
Several custodians
ServiceMaster Coordinator, personnel coordinator
Budget director; Director Accounting
Local 52 AFLCIO Representative

Section A: The Background

Norfolk Public Schools commenced its public/private partnership for the provision of custodial services in September, 1989 (with a contract expiring in August,1994). Previously, the school system had managed the provision of custodial services exclusively. Dissatisfaction about significant differences in cleanliness between buildings, the perception of over staffing, and poor management, was an established and commonplace viewpoint among school system administration pertaining to the school system's custodial services.

Servicemaster is a public/private partnership in providing the custodial services for Norfolk Public Schools. The partnership has existed since 1989. Before 1989, school principals were responsible for the management of their own custodial staff, with two system-wide custodial supervisors coordinating the efforts at 60 sites. Servicemaster, at a cost of $1,020,000 per year, provides 8 management staff, a delivery driver, a secretary, 4 vehicles and all cleaning equipment and supplies (excluding disposable paper products

and trash can liners, soap etc.). They train and supervise all custodial staff, provide all paperwork to payroll and personnel on hours worked, leave and performance and provide for the training of substitutes. All personnel policies, disciplinary procedures, salaries and benefits for its employees continue to be set by Norfolk Public Schools.

Section B: Status of Routinization

Budget

The innovation has been funded annually to the fullest extent since its inception in 1989 [P]. There has never been any opposition from administration to funding the innovation, since it actually saves money [C]. ServiceMaster's proprietary staffing model guaranteed savings in personnel and, since 1989, 72 custodial workers have been cut from the labor force - a total of 77 cuts were identified at the beginning of the innovation). Servicemaster is paid for from local funds. Total custodial services now cost $5.97 million per annum ($1,920,000 of which goes directly to Servicemaster for their salaries, 4 vehicles and equipment).

Personnel

The innovation has caused the creation of a new Norfolk Public Schools Servicemaster Coordinator position, with the title Assistant in School Plant. New job descriptions exist for all custodial positions and reflect their duties [P]. There are 307 custodial positions in all (297 Norfolk Public

Schools positions and 10 Servicemaster positions). There has been no significant introduction of new personnel, nor departure of key personnel involved with the innovation [C].

Training

Servicemaster has an extremely formal established training system [P]. For instance, they instruct in "the 7 steps to cleaning a room", and train in the use of their equipment whereby (1) the use is modelled, (2) the trainee demonstrates, and (3) the trainee teaches the use back to the trainer. All employees get initial training and receive further training twice every year on cleaning procedures and use of equipment and products [C]. A formal Servicemaster curriculum exists [P].

Organizational Governance

The innovation is in widespread use in that Servicemaster manages all of Norfolk Public Schools' buildings [C]. Detailed procedures have been created by Servicemaster and they are strictly followed [P]. The arrangement is mandated by contract between the school system and Servicemaster.

Supply and Maintenance

Equipment / supply turnover is commonplace with Servicemaster. They are a national organization with their own products and testing labs. Their thorough, detailed training methodology and testing of new products before introduction has resulted in smooth turnover of old equipment and supplies [C]. Servicemaster owns and maintains

all of the equipment used for custodial services [P].

Section C: Reasons for Routinization Level

1 Prior Need: Servicemaster did not arrive out of any crisis, but there was established dissatisfaction with the uneven cleanliness of buildings, and many felt custodial staff had too much time on their hands and that their management was weak. Need for a better way of doing business was known and accepted. Blatant and obvious prior need existed. Principals report that they had no time, nor the expertise, to properly manage and evaluate the work of the custodial staff. They pressed through their associations for a new arrangement. Parental complaints, particularly about the state of school bathrooms, were commonplace.

2 Core: Servicemaster provides essential (core) custodial services for the whole school system. Clean schools can be defined as an essential part of the educational service provided to children in 1993.

3 Competition: While there was significant lack of practitioner support for Servicemaster when it was adopted and implemented, there has never been any documented or reported internal competition or rivalry from any other department or group.

4 Service Payoffs: There are clearly demonstrated service payoffs for Norfolk Public Schools. Seventy seven fewer workers are paid from the custodial payroll. Budget has

estimated approximately $750,000 in savings per year because of this. Also, Norfolk Public Schools has discontinued paying exterminators for pest control. The system's own custodians, trained by Servicemaster, are paid a salary differential to do it at a total cost of only $22,000 per year for 60 buildings (costs before were approximately $100,000). Other savings are felt to exist in that Servicemaster's procedures mean regular replacement of filters on Air Conditioners (filter logs are kept), checking and replacing of chair guides to prevent tearing of tile and rugs, and more regular rug cleaning.

5 Client / Community Support: Principals interviewed stated many positive comments from parents on the appearance of the schools. They remember negative comments on dirty buildings before the Servicemaster arrangement.

6 Practitioner Support: While practitioners originally opposed the innovation, they do not do so now. The Servicemaster managers are described as people-oriented. They visit their buildings daily and interact directly with the custodial staff at all sites. Originally, there was some significant opposition to Servicemaster from some custodial staff and the AFLCIO. The perception was that it would overwork the staff. The 77 staff cuts proposed were deeply resented. Ten or twelve workers quit immediately. Eight to ten were fired when they refused to adapt and challenged the authority of Servicemaster. Today, there is no evidence of

opposition to the innovation. The AFLCIO local representative disliked the reduction in staff, and the fact that several supervisory positions were eliminated for custodial personnel. These two custodial supervisory positions were closed when the Servicemaster agreement was reached. Five custodians resigned rather than submit to the new arrangement.

7 Active Innovator: The budget director was an active innovator in moving to Servicemaster, but he was not alone - the superintendent of schools and director of school plant facilities promoted and pushed for the changeover. The budget director was the leader in demonstrating the savings to be had, and worked directly with Servicemaster on the contract details.

8 Upper Administrative Support: The innovation has upper level administrative support, including that of the superintendent, the chief financial officer and budget director, and chief personnel officer. They describe Servicemaster as open and professional and receptive to their concerns. The budget director is impressed at the efficiency and savings they produce in personnel costs. The personnel director is impressed with the management and supervisory support they provide to the principals, freeing them to focus on instructional matters.

Summary of Passages and Cycles Attain (Servicemaster)

[P] Full and permanent funding +

[C] Survives annual budget cycles +

[P] Duties included in job descriptions	+
[C] Survives personnel turnover	n/a
[P] Curriculum/certification required	+
[C] Training cycles exist	+
[P] Required by statute/regulation	+
[C] In widespread use	+
[P]Maintenance performed internally	+
[C] Survives equipment turnover	+

9 out of 9 = HIGH routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	+
Core function	+
Competition/rivalry	+
Service payoffs	+
Community/client support	+
Practitioner support	+
Single, active innovator	+
Administrative support	+

Summary

Servicemaster is clearly highly routinized because it has attained all passages and cycles, with the exception of "personnel turnover" which was not relevant, since no turnover had occurred. Additionally, all eight factors proposed to facilitate routinization were present - that is, the innovation is a core function which was adopted out of clearly

established prior need. It has identifiable service payoffs, community support and no internal competition. Further, the innovation had an active innovator at adoption and implementation stages, with strong administrative support. Practitioner support is also evidenced from interviews with custodial staff, despite initial problems.

CASE 3: FINANCIAL MANAGEMENT HUMAN RESOURCE SYSTEM

Persons Interviewed:

Directors Financial Management System; Budget; Accounting
Director of Management Information Systems
Payroll Coordinator
Office Manager, personnel department
Senior personnel transactions clerk
Several clerical employees

Section A: The Background

The old Norfolk Public Schools' financial management system, which operated during the pre-1985 days of computing in the school system, involved batch processing (punching cards at a central site from source documents sent from many remote sites). Unit record (card) equipment supported the processing. Change was forced externally by IBM's final declaration that it could no longer support such an operation. The new director of data processing pushed for a new online interactive system - data entry by the user departments. He was the initial key actor in selling the need for such a system to upper level administrators. The innovation is a collection of software products known as the Local Education Authority Financial System (LEAFS) and the Government Human Resource System (GHRS), which together comprise an automated Financial and Human Resource Management System. Accounting, payroll, purchasing and the personnel departments are online to the mainframe computer in management information systems for data entry and on-screen query of data on all accounts and all employees. The innovation is maintained by a financial

systems department made up of a director, one analyst, a secretary, a part time programmer and two analysts on loan from the department of management information systems. In 1986, the system was installed for $150,000 (which was for the LEAFS financial management system and a human resource management system called LGPS). After 2 years the LGPS system was abandoned and a new human resource management system known as GHRS was installed for an additional $15,000.

Section B: Status of Routinization

Budget

The director of financial management systems sees the system as permanently funded, but not fully funded [P]. Training is not funded at all, the secretary is only temporary, and important subsystems of the system (known as position control, applicant tracking and benefits management) are not supported by the budget. They remain uninstalled due to lack of support personnel. The system, which has 2 full-time employees and $100,000 for annual maintenance, is locally funded and has been since 1986 [C].

Personnel

Six people are currently working full time on the project, but two are on loan from management information systems, the secretary is temporarily assigned, and a programmer is half time. The others are the financial management systems director, and the financial management systems supervisor.

The director position was established in October, 1989 by upgrade of a project leader position created in July, 1989. The supervisor position was created in July, 1987 and upgraded to its present level in July, 1992. Both of these newly created positions have job descriptions on file in personnel [P]. Approximately 300 people use the innovation as part of their jobs, with new job titles and job descriptions having being added for financial management systems director, supervisor, and warehouse data specialist.

New staff added were the financial analyst position, with the individual hired laterally transferring to the budget department in 1990 and being replaced by the incumbent who was upgraded in July 1992. The lateral move was a temporary setback for the innovation, but necessary reports and payroll were still generated due to long overtime hours logged by the financial management systems director who temporarily assumed the duties of the position in addition to his own. A key programmer on loan from M.I.S. quit the organization, but the setback in meeting system needs again was only temporary [C].

Training

"If anything, our problem is training. There is a lack of upper administrative support for training. We do startup training for new users and ongoing training for enhancements to the system [C]. Training manuals exist but no single individual is dedicated to training. No formal curriculum exists nor certification requirements [P]. Training is simply

casual, the minimum," stated the financial systems director during the interview.

Organizational Governance

The use of the innovation is not required by statute nor regulation - however clearly established procedures in personnel, purchasing, payroll and accounting require its use [P]. All forms of paperwork have been reduced for all departments. There has been a big reduction in the sending of source documents from these sites - they are not sent at all currently. In February, 1987, the old batch procedures stopped completely and the new system was installed; there was no phase in at all. The innovation's use is widespread (throughout the school system) and frequent (the users are online every day from multiple sites) [C].

Supply and Maintenance

Supply and maintenance of personal computers and printers is provided by the school system's electronics department. A local company maintains the mainframe and peripherals on long-term contract [P]. There has been equipment turnover - with a new mainframe in 7/91, new disk storage and operating system, and a proliferation of personal computers and terminals throughout the system. The result has been a much more efficient and responsive financial management systems system [C].

Section C: Reasons for Routinization Level

1 Prior Need:

Prior need drove the adoption of the innovation. IBM halted maintenance on the old batch equipment, which operated by reading punched cards. (The accounting department wanted no more than currently was being done, there was no internal pressure for change. The purchasing and personnel departments were disinterested, although they now benefit from the innovation). In other words, there was no pressure to change from anyone in administration. The innovation happened because something had to, in that the old way of doing business was no longer an option.

2 Core:

An FMS (financial management system), however an organization defines it, is certainly core. It manages purchasing, fixed assets, inventory control and budgeting. Also it maintains demographic data, teacher certification files and payroll information. These internal services are all essential to the running of a public school system.

3 Competition:

There is no internal opposition to the innovation, although there is opposition to the continuance of the project team (now "department") running it. The management information systems department wants disbandment of the new department and full control over the system. Management information systems is certainly threatened by the innovation. In effect the

school system now has two data processing departments: one for student data, and another (the new department) for financial and personnel data. It is entirely conceivable that in future they would merge, with the loss of management positions by individuals in either of the departments.

There was early opposition / lack of cooperation from the systems analyst in charge of the old batch system. This made transfer of data to the new system more difficult than it needed to be, but the innovation is now a fait accompli, and the resisting individual has been assigned new duties in the management information systems department.

4: Service payoffs

The only problem created has been conflict between M.I.S. and the business division over continuance of the FMS department. The innovation was necessary to continue the school system's work of budgeting, fixed assets management, payroll, purchasing and keying of personnel records. No new service payoffs exist apart from "improved information management and more informal decision-making", states the FMS director.

5 Client/Community Support:

Not applicable. Students and the outside community are unaware of the innovation.

6 Practitioner Support:

There was great resentment and resistance to the new system from clerical staff. It was imposed on them. At the beginning there were cross-departmental meetings and updates -

since discontinued. There is neither significant interest nor deep understanding from upper administration. There is no camaraderie in working on the system. Information on changes, system updates is communicated remotely - usually in the form of memoranda.

7 Innovator:

The early innovator was the M.I.S. director, quickly followed by the current FMS director who promotes the system and the subsystems accompanying it that have not yet been purchased by the school system. The management information system recognized that the old punched card system could not continue. It was his idea to set up the financial management systems project team to manage the new innovation. He was successful in having this team set up, with its own small staff and offices. What has happened since then is that the project leader has become the resident expert in the new system. Indeed, it was his discussion of quitting the organization and join the vendor company as an employee that resulted in his promotion to director and to creation of the department. He has the reputation as one who works tirelessly to make the system work and has developed close ties to the support personnel in the vendor company. This was important during some early months when the Norfolk schools' computer hardware was insufficient to run the new system. The new director was able to push for funding for new disk space and an enhanced operating system. No other administrator can

speak with his authority on the system and he has been universally credited as the key actor who got the system successfully installed (rather than as a project disaster which may have resulted in administrative dismissals.

8 Upper Administration Support:

There is little upper level administration support. The innovation was grudgingly supported, and apart from basic funding, no other signs of support have been demonstrated. The new director has unsuccessfully lobbied for training funds, and to have enhancing subsystems to the software package added, but to no avail.

Summary of Passages and Cycles Attained (Financial Mgmt)

[P]	Full and permanent funding	0
[C]	Survives annual budget cycles	+
[P]	Duties included in job descriptions	+
[C]	Survives personnel turnover	n/a
[P]	Curriculum/certification required	0
[C]	Training cycles exist	0
[P]	Required by statute/regulation	+
[C]	In widespread use	+
[P]	Maintenance performed internally	+
[C]	Survives equipment turnover	+

6 out of 9 = Moderate routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	+

Core function	+
Competition/rivalry	+
Service payoffs	0
Community/client support	n/a
Practitioner support	0
Single, active innovator	+
Administrative support	0

Summary

The financial management innovation is only moderately routinized. Its biggest weaknesses are lack of resources dedicated to training on the usage of a complex system. Also, the financial systems department is minimally staffed with a temporary secretary and temporary staff "on loan" from management information systems. Assignment of further resources would undoubtedly result in a highly routinized innovation.

Administrative support for the innovation is limited to minimal funding. Service payoffs are not new, in that the system performs the same essential functions as the old punch card system, with few additional benefits. Practitioner support is low. The system was imposed on practitioners as the new way of doing business and they struggled to learn it with minimal training.

CASE 4: THE SKILLS CENTER

Persons Interviewed

Directors of the Skills Center, Adult Education
Skills center Job Developer
Skills Center secretary
Several instructors and students at the Skills Center

Section A: The Background

Skills training for the disadvantaged and unemployed in Norfolk Public Schools began under the Manpower Development and Training act in 1963. The Skills Center is a federally funded program. The clerk stenography program was the first program conducted. It began in May, 1963, and graduated its first class in November, 1963. Later, in 1964, the building custodian and shoe repair programs were added. In 1965, auto body repair and auto mechanics programs were introduced, and in 1966, a horticulture and landscape specialist program was introduced. A nursing refresher program was added in 1967, and in 1968, cement finishers, welding and sewing programs were added. General salesperson, meat cutting, nursing aide and truck driving were added in 1969. In 1970, a bricklaying program was offered.

In 1970, the Manpower Administration of the United States Department of Labor and the Office of Education, U.S. Department of Health, Education and Welfare designated the Manpower Development and Training programs in Norfolk as constituting a Skills Center. As a Skills Center, the institution was staffed to provide a full range of services to

individuals referred there for job training and/or basic and remedial education.

The Skills Center is a decentralized, self-contained facility, operating under the supervision of the department of Adult and Vocational Education, Norfolk Public Schools. It provides training and services to residents of planning District 21, including Norfolk, Portsmouth, Virginia Beach, Chesapeake, Suffolk, Franklin, Isle of Wight County and Southampton County. Since its inception, the Skills Center's training programs have reflected changing labor market demands for the areas it serves. Programs have been started to meet labor market demands and discontinued when no longer justified.

Skills Centers throughout the country came into being because there were no other institutions either capable or willing to provide institutional training geared specifically for the needs of the disadvantaged. In filling this vacuum, Norfolk Public Schools Skills Center provides valuable services to the community. Currently, the Norfolk Skills Center receives federal funds administered by the State Department of Education, Employment Training Division, and the Southwestern Virginia Job Training Administration.

The Norfolk Skills Center offers post secondary skills training and remedial enhancement education to individuals who have graduated from or are no longer in high schools. All applicants must be at least 17 1/2 years of age to qualify.

The Skills Center is a multi-occupational training facility providing entry level training in a number of different occupational programs. Classes are offered year round, Monday through Thursday. All classes are open entry/open exit and are free to eligible trainees under the Job Training Act. Currently, classes are offered in auto body, auto technician, bricklaying, building maintenance, landscaping, word processing/office technology and welding. Trainees who qualify may receive daily lunch and travel allowance, Pell grant federal assistance, and unemployment benefits.

Section B: Status of Routinization

Budget

The innovation has survived since its inception in 1963, but has never been funded by local money [C]. When the former superintendent (he departed in June, 1992) was asked by the current director about the extent of local support and commitment, he replied that his financial commitment extended only to kindergarten through 12th grade [P].

Originally, the innovation was funded fully by federal management development training act funds in 1963 and instructors worked five days per week, 12 months per year. CETA replaced MDTA. In 1983, President Reagan shifted funds from CETA to The Job Training Partnership Act, and money/accountability tightened. The money became state "flow-through" money (rather than coming directly from the federal

government). In 1986, funding cuts meant that the instructors went to 11 month contracts (instead of 12). Further cuts in 1987 meant a 4 day work week and 10.5 month contracts. Currently, the budget is $7,632,306 per annum for 9 instructors, 2 counselors, 2 secretaries, 1 custodian, and all equipment.

Personnel

Fourteen staff are involved full time in using the innovation. Job descriptions are on file in personnel for the director, secretary, and custodian, but not for the others [P]. There is no evidence of the innovation ever having been set back by the departure of key personnel, or by the introduction of new personnel [C]. (The current director has been on board since 1983. The secretary has been there since 1968. The previous director served from 1965-83, and, at its inception in 1963, a supervisor was in charge (not a director, he simply maintained records and reported to the director of Adult and Vocational education). Classes were fewer and smaller in the 1960's.

Training

No certification is currently required by the state of Virginia for the instructors employed at the skills center. The individuals hired as instructors must be taught to become instructors [P]. This is accomplished by sending them to the Norfolk Public Schools "Workshop on Instructional Skills" (organized by the department of staff development), sending

them to 4 day state workshops, and via conferencing with the principal following observations [C]. Sometimes instructors are sent to observe certified instructors at Norfolk Technical Vocational Center. In contrast, other teachers in the school system must be certified by the state. These certificates are valid for only five years, and courses must be taken for renewal. Also, for these certified teachers, a college degree is required, with courses in "professional knowledge" and 15 weeks of student teaching.

Organizational Governance

The innovation is not required by statute, regulation nor procedures manual. The director has witnessed an enrollment of about 340 students remain constant for the last 8/10 years (the center serves all of Tidewater). The Skills Center was not mandated by the Manpower Development and Training Act of 1963 [P]. The legislation resulted only in feelers being put out by the department of vocational education in Richmond to Norfolk Schools. Hampton's Skills Center folded in 1989 due to low enrollment and students not getting jobs. The state (under the Southeastern Virginia Job Training Act) has full time employees who check "verifying reports". The state must be reported to monthly on the hire status of students and 30 and 60 day follow-up reports are mandated. The Skills Center' administration admits that it works very hard just to stay in existence, and that thoughts of becoming widespread would be unrealistic [C].

Supply and Maintenance

Equipment turnover and modernization has occurred gradually over the years, e.g. typewriters to computers, the introduction of computer engine analysis [C]. Maintenance is provided by the school system, which then bills the skills center (therefore, in effect, it is paid for by flow-through funds) [P]. The building is rented from the City of Norfolk for $30,000 per year.

Section C: Reasons for Routinization Level

1 Prior Need: While no local crisis directly spawned the Skills Center in Norfolk, there was clearly a need nationally in urban areas of this country. The Manpower Development and Training Act was a 1963 federal act to train the unemployed in urban centers, to teach the skills for employment, but local officials did not pursue establishment of a skills center in Norfolk out of prior need conditions. Rather, according to the current director, the innovation was sold to the school system by the state.

2 Core: A skills center is not required of local school divisions in Virginia. The superintendent said the skills center is not core (Norfolk Public School's financial commitment is to k-12 students only). He has made clear to the director that all that all funding must be from other than local sources.

3 Competition: No adverse group is identifiable. The

federal monies used to fund the innovation are specified exclusively for the skills center, and therefore no other internal group has shown any interest in them.

4 Service Payoffs: The South Eastern Virginia Job Training Act (SVJTA) requires 65% placement of enrollees in order to provide continued funding. Placement runs at 65%-68% of enrollment. These are clear service payoffs. The skills center is required to demonstrate several times a year that it is meeting the 65% quota.

5 Community Support: Many businesses would support the Skills Center (a local Pontiac and a local Dodge dealership for auto technicians, a local Nursery for horticulture students, and Norfolk State University for clerical assistants). Norfolk Naval Hospital administrators state they would like to hire all of their building maintenance employees from graduates of the Skills Center. They state in interview that they would be happy to state their support for the skills center in writing if requested.

6 Practitioner support: Excellent camaraderie exists. Their motto is: " We do what has to be done". The current director reports: "Driving to Hampton for parts, working on the boiler, picking up trash. I stress family at job interviews and at staff meetings". Instructors have sometimes left for regular school system teaching positions citing job security as the reason. (Also the Skills Center's employee benefits are somewhat less than for regular teachers in that there is a

maximum of double sick leave accrual allowed - as opposed to unlimited accrual for other employees).

7 Active Innovator: While current and former administrators have supported the innovation, no single active innovator exists or has been identified as existing in the past, who can be credited with the Skills Center opening in Norfolk or its continued survival here.

8 Upper Administrative Support: The assistant superintendent for middle and high schools and the director of Adult and Vocational education have always enunciated support, but the superintendent has made clear that no local funding is possible. Based on this position, it is concluded that upper-level administrative support is weak.

Summary of Passages and Cycles Attained (Skills Ctr)

[P] Full and permanent funding	0
[C] Survives annual budget cycles	0
[P] Duties included in job descriptions	+
[C] Survives personnel turnover	+
[P] Curriculum/certification required	0
[C] Training cycles exist	+
[P] Required by statute/regulation	+
[C] In widespread use	0
[P]Maintenance performed internally	+
[C] Survives equipment turnover	+

6 out of 10 = Moderate Routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	+
Core function	0
Competition/rivalry	+
Service payoffs	+
Community/client support	+
Practitioner support	+
Single, active innovator	0
Administrative support	0

Summary

The Skills Center is only moderately routinized in Norfolk Public Schools, despite the fact it has been established since 1963. Its major weakness is funding. It is fully funded with federal monies and has never been locally funded. Cuts in 1986 and 1987 reduced the contract length and work hours of instructors. The certificates required of Norfolk's teachers are not required of Skills Center' instructors. The innovation is not in widespread use and works hard to attract and retain the approximately 340 students normally enrolled.

A major problem for the Skills Center is that it cannot be defined as a core function of the school system; it is ancillary. No single, active innovator was identified as a key promoter of the center. Administrative support is limited. The center would certainly close if federal funding was withdrawn.

CASE 5: THE STUDENT INFORMATION SYSTEM

Persons interviewed:

Senior director M.I.S.
Database manager
Assistant director M.I.S.
Middle school assistant principal
Information center specialist
Pupil attendance technician

Section A: The Background

In 1985, the director of data processing resigned, signalling the end of an era in computing in Norfolk Public Schools - the era of unit-record equipment, batch processing, and punched cards. The hiring of the current senior director of data processing (now M.I.S.) signalled the beginning of a new phase in the organization's computing history - online/remote data entry and file "query" capability by users. The "old student information system" before 1985 was one whereby schools spent much time gathering and physically delivering data to the central office data processing department, but received little or nothing in return. This data was primarily gathered for use by central office administrators in generating mandated state and federal reports. Complaints from school principals and middle management on their lack of ability to retrieve information were frequent but long ignored. Old software, "third generation" (non-interactive) computer languages, and old techniques did not allow an adequate response to the needs of users. In 1986, the new director reported to upper administration (the superintendent,

deputy superintendent and cabinet) that the situation was becoming critical. IBM had announced that it would no longer maintain the school system's unit record (key punch and other card handling) equipment. The director pushed for funding for new equipment and software and was given permission to proceed with the setting up of a project team. A leading systems analyst in the department was named as project leader for a new student information system. His brief was to recommend a database system that would allow remote data entry and "query" access (i.e. the ability to make interactive inquiries on students' grades, test scores, attendance, disciplinary record, demographics, - indeed on any of the data kept about students on the database.

Section B: Status of Routinization

Budget

The annual cost of the innovation is $20,000 for the lease of software. The new student information system is considered fully and permanently funded by local funds [P] and has been since its inception in 1986 [C].

Personnel

Two people are involved full time in operating the innovation -a database manager and a systems analyst. The database manager position was a new one arising from the project, established in 1989 with new job title and job description. About 230 practitioners use the system in the schools, and its

use is contained in the job descriptions of the school system's information center specialist (located at every school) [P]. One new staff member was added in 1991 - an programmer experienced in the selected database language whose transition into the organization went smoothly. Two programmers have left the project since its inception, with no visible impact to its status [C].

Training

Training is conducted internally on an ongoing basis. It started with the implementation in 1988 and is conducted as needed by the management information system's department [C]. While training materials exist, as do management information systems procedures manuals (a student information systems manual and a departmental procedures manual), skills taught are not part of professional standards, curriculum nor certification requirements [P].

Organizational Governance

The innovation has grown and expanded since its development and currently addresses attendance, discipline, grades, test scores, special programs, demographic data, and enrollment. It is in widespread use (every school) in the system [C]. It has replaced old-fashioned manual "look-up" operations by school staff, and the sending of source documents through the internal mail system has been replaced by remote data entry from each site. The old source documents have been replaced by a new form. It is not part of statute nor regulation [P].

Although indirectly the state mandates that certain data be reported, it does not stipulate how the school system should gather data and create reports. Internal procedures however, do dictate to practitioners that the use of the new SIS is not optional [P].

Supply and Maintenance

Personal computers and printers used at remote sites are maintained by school electronics. The central office mainframe computer and peripherals have been maintained by long term contract with a local company [P]. The innovation has survived equipment turnover at both the schools and central office. (Newer personal computers and laser printers were installed in 1991 at the schools). In 1988, a new 4361 mainframe was purchased, and in 1990 a new 9300 series mainframe [C]. All software (VM, SQL DS, DBMS) is leased from IBM.

Section C: Reasons for Routinization Level

1: Prior Need

The new student information system was developed out of almost crisis conditions. There was clearly established prior need - IBM stated it could no longer support equipment running the old system, and the old "in-house" software was based on this unit-record equipment. The school system had absolutely no choice but to find another way of performing its maintenance of student data and of reporting that data when required.

2: Core

Maintenance of student information is clearly a core function of any public school system. Keeping and maintaining accurate data is absolutely required by the school board, state and federal governments, and the community. A great variety of reports are generated annually from the student information data base to the public, state and federal governments.

3: Competition

Many principals and assistant principals initially opposed the change verbally because they were comfortable with the old methods (some had become expert in them, especially in the complex task of scheduling classes). Also, the programming manager was negative on the new SIS. He didn't see it as necessary. The old system was his creation. He and some school administrators were clearly opposed. The school personnel however cooperated with the innovation despite some negative commentary. The programming manager was added to the project team and soon participated fully in the development of the new student information system.

4: Service Related Payoffs

The new SIS has demonstrated service payoffs. The new access to student data that it allows caused such an immediate demand that a systems analyst in the department was dedicated to generating ad hoc reports from telephone requests from the schools. In effect a "student data hotline" was created in 1990. By June 1993, it had delivered 420 reports to users.

The requests have come mainly from building principals. (An unexpected problem was data security, which resulted in the assistant director of M.I.S. assuming the duties of security administrator to control access to confidential student information.

5: Client/Community Support

Not applicable. The students and community may be vaguely aware of the system, as may be the community at large, but no feedback, either positive or negative, has been received from either party.

6: Practitioner Support

The database manager initially spent several months interviewing multiple practitioners at all levels (clerical through administrative) about what their needs were and what they wanted included in the new system. The practitioners (manly "school information processing clerks") report themselves comfortable with the system, like its ease of use - and could not contemplate going back to the old ways. They are kept informed of developments at periodic user group meetings, by way of a quarterly departmental newsletter and via electronic mail with messages from a "Helpful Harriet" (the assistant director).

7: Innovator

The newly appointed (in 1985) and current senior director of M.I.S. was the key innnovator. Initially, he presented to the superintendent's cabinet that there was no alternative to

development of a new student information system. He chose his leading systems analyst as project leader, and this project leader fully evaluated the needs of the schools and central office in an interview process lasting three months. The project leader also formed a design team that included users and the originally oppositional program manager. He presented at all stages to upper-level administration and engaged actively in the early training of practitioners, working overtime hours in the early going to ensure success.

8: Upper-level Administrative Support

The superintendent's cabinet has been generally supportive. They supplied crucial support when needed (with the upgrade of the mainframe computer and also of the mainframe operating system - required to support the new database management software). Without funding at these crucial stages, the project would have collapsed.

Summary of Passages and Cycles Attained (Student Info)

[P] Full and permanent funding	+
[C] Survives annual budget cycles	+
[P] Duties included in job descriptions	+
[C] Survives personnel turnover	+
[P] Curriculum/certification required	0
[C] Training cycles exist	+
[P] Required by statute/regulation	0
[C] In widespread use	+
[P]Maintenance performed internally	+

[C] Survives equipment turnover +

8 out of 10 = HIGH routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	+
Core function	+
Competition/rivalry	+
Service payoffs	+
Community/client support	n/a
Practitioner support	+
Single, active innovator	+
Administrative support	+

Summary

The student information system is highly routinized because it is fully funded, has associated functions formally included in the job descriptions of management information systems' personnel and has formally established training in place for users. Further, it is in widespread usage throughout the school system, has survived turnover of both personnel and of computer equipment; and has internal maintenance in place as an indicator of its important role in the school system.

Of the eight factors proposed as facilitating routinization, all were present with the exception of client/ community support; and this was considered not applicable.

CASE 6: PARENT RESOURCE CENTER

Persons Interviewed

Director of special education
Parent Resource Coordinator
Special education coordinators
Budget director
Several parents

Section A: The Background

The Norfolk Schools' Parent Resource Center was begun in 1986 at the city's Lakewood Education Center (moving in 1989 to the Stuart Center, also in Norfolk). The goal of the Parent Resource Center is to promote a working relationship between families, schools and the community to better serve special needs students in the Norfolk Public School system.

Services provided include: workshops (to disseminate to parents of special needs students information about the special education programs of Norfolk Public Schools), a lending library of books and video tapes about parenting children with disabilities, a data bank providing information on community services, support groups and programs.

The startup cost for the center was $8,000 in 1986 for 2 part-time (20 hours a week) parent coordinators, a phone-line and phone bills. A room at Norfolk Public Schools' Lakewood Center, furniture and supplies was provided by the school system. The center is currently staffed by 1 full-time parent coordinator, with a special education coordinator from central office serving as a resource. This staff is trained in special education regulations and in providing

support and referral service. Training was provided by the Parent Education Advocacy Training Center in Alexandria, the Commonwealth of Virginia department of education, and Norfolk Public Schools. The center was initially proposed by the current full-time parent coordinator in 1985, who directly approached the then (and current) director of special education. The center is promoted via annual direct mailing to the approximately 4,000 special education families in the city and by brochures distributed by the school system's school social workers. The direct mailing is paid for by the department of special education services.

Section B: Status of Routinization

Budget

The parent center now costs (in 1993) about $32,000 per year - the salary of the parent coordinator ($10,000) and half of the salary of a central office special education coordinator ($22,000) who spends half her time in the function. It is considered permanently and fully funded by the practitioners [P], with no budget threat experienced since its inception in 1986 [C]. Federal funds account for $10,000 (the parent educator's salary), with local monies accounting for the balance. Norfolk Public Schools receives approximately $1,000,000 per year in federal funds. This amount is determined by the size of its special education student population. The school system uses $10,000 of these funds for

payment of the parent center

Personnel

Job descriptions exist in personnel for both positions [P]. When the central office coordinator departed in 1990 no significant disruption was caused to the innovation. The parent coordinator however is clearly the central figure in running the center, as well as the key actor at its inception, and it remains to be seen how the center will survive her departure when that time comes [C].

Training

One week of startup training was provided by (PEATC) Parent Educational Advocacy Training Center in Alexandria, Virginia. On-going training has also been provided every year, several times a year, by the Commonwealth of Virginia department of education [C]. Formal manuals and curriculum do exist for this training - but no certification is required for the position of parent coordinator [P].

Organizational Governance

The establishment of parent resource centers is mandated neither by the federal, state nor local government. Norfolk's center is supported by federal grant money. The state has recently offered other localities start up funding of $8000 for such centers, but adoption remains optional [P]. Since establishment, the center has increasingly supported department of special education teachers and central office administrators in acting as an intermediary with parents. It

also averages 87 calls per week from parents seeking assistance [C]. The major disappointment is that only 4 or 5 parents attend at frequently scheduled workshops - despite mass mailings and provision of a free evening meal.

Supply and Maintenance

Supply and maintenance is provided totally by Norfolk Public Schools, with no charge-back [P]. "Equipment turnover" is not applicable for this innovation, since little more than office supplies, furniture, and telephones has been associated with it [C].

Section C: Reasons for Routinization Level

1 Prior Need: The parent coordinator saw prior need for this innovation when it was established in 1985: "parents were calling my house" but there is no other clear evidence of such need being especially obvious to others in 1985/86. The school system was certainly not reacting to any dire emergency or clear and established prior need. The special education director describes the innovation as "being sold to me".

2 Core: The Parent resource Center is not mandated and clearly not a core service, as for instance are special education programs for learning disabled and mentally retarded children. These are required.

3 Competition: No internal, active adversary group opposes the innovation - although some administrators in the department of special education did so initially: "Another

whip for the parents to use on us" is the favorite statement remembered by the parent coordinator. However, they soon began to support the innovation when they recognized that it assisted them in their work.

4 Service Payoffs: Central office special education administrators say that there are demonstrated service payoffs: whenever possible they now refer parents who call to the parent resource center. Also, "surrogate parent training" was transferred to the center in 1986, relieving the department of special education of that time-consuming function. An average of 87 phone calls per week from parents is the only clearly quantifiable measure of service payoff.

5 Community Support: Many community agencies interact and support the innovation, e.g. Norfolk Community Services Board, CHANCE Program (Challenging Handicapped Adults' Needs for 8 Upper Administration Support: Upper level administrators have been very supportive: the special education director, the assistant superintendent for instruction, the assistant superintendent for general administration and personnel all speak positively of the service it provides. The budget director considers it "a bargain", stating that it accomplishes much at very little cost.Community Experience), and, of course, the participating parents.

6 Practitioner Support: Communication between the school system administration and the parent center staff and parents is warm, open and trusting. The special education director

visits often, but allows the coordinator free rein in her work. Focus is on helping parents (for instance the coordinator does not like to leave and turn on the phone message recorder because "parents call here because they want help immediately".

7 Active Innovator: The current parent coordinator is clearly the single, active innovator who pushed, promoted, sold, introduced and established the innovation.
She and the department of special education teachers and administrators all state they would oppose the innovation's removal.

8 Upper Administration Support: Upper level administrators have been very supportive: the special education director, the assistant superintendent for instruction, the assistant superintendent for general administration and personnel all speak positively of the service it provides. The budget director considers it "a bargain", stating that it accomplishes much at very little cost.

Summary of Passages and Cycles Attained (Parent Center)

[P]	Full and permanent funding	+
[C]	Survives annual budget cycles	+
[P]	Duties included in job descriptions	+
[C]	Survives personnel turnover	n/a
[P]	Curriculum/certification required	0
[C]	Training cycles exist	+
[P]	Required by statute/regulation	0

[C] In widespread use	+
[P] Maintenance performed internally	+
[C] Survives equipment turnover	n/a

6 out of 8 = HIGH routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	0
Core function	0
Competition/rivalry	+
Service payoffs	+
Community/client support	+
Practitioner support	+
Single, active innovator	+
Administrative support	+

Summary

The special education parent resource center is highly routinized in Norfolk Public Schools, despite its existence since only 1986. It has full funding, job descriptions for its personnel, is widely used by special education administrators and teachers, and has ongoing training for its staff. Difficult to determine is how the loss of the parent educator, who has been with the innovation since its adoption, might impact on the center.

Apart from the fact that the center did not arise out of any clearly established prior need or crisis, nor is considered a core function of the school system, it was

concluded that the factors proposed to facilitate routinization were present for the innovation. That is, it shows service payoffs, client/community support, both practitioner and administrative support, has a single, active innovator, and lacks internal rivalry for resources. This final factor undoubtedly can be explained by the innovation's low cost.

CASE 7: NORSTAR

Persons Interviewed
Norstar teacher
Director of gifted programs
Science coordinator
Several teachers of other subjects

Section A: The Background

In 1984, the teacher of an extended day gifted and talented program developed a research proposal with Norfolk Public Schools' students which was accepted by NASA in Langley, Virginia. The proposal was that an experiment, to be developed by the students, should be transported into orbit aboard a future space shuttle. NASA agreed to fund the experiment by paying all costs related to carrying the experiment aboard the flight ($10,000). All other costs were to belong to Norfolk Public Schools. The project includes definition, design, manufacture, testing analysis, and publishing the results of an acoustical experiment which will fly on the space shuttle in November, 1993. The project also represents the first time an entire team of NASA scientists, engineers, and managers have volunteered to support a high school project in space flight. The Norstar project is a partnership between Norfolk Public Schools, the NASA Langley Research Center, and community businesses, industries and colleges. The "payload" is a container which houses the experiment at a cost of $10,000 and is placed in the cargo bay of the shuttle. Education is the main program objective. The

opportunity to fly in 1988 was delayed due to the Challenger disaster. Since that time the experiment has been modified radically to better suit the needs and abilities of the high school student participants. The present experiment will videotape modal patterns formed by various sound frequencies in the microgravity environment of space. The design has been approved by NASA and Norstar students are in the process of building a flight-worthy package. Flight is still anticipated for November, 1994.

Section B: Status of Routinization

Budget

NASA is responsible for all flight costs for the Norfolk Public Schools experiment and donates the expertise of their engineers as free consultants. Norfolk Public schools is responsible for the salaries of 2 teachers and 1 part-time secretary ($100,000 per annum approximately), and the costs of housing the program at Norfolk Technical Vocational Center, furnishing it, and equipping it with computers, computer peripherals and a multitude of software (25 Mackintosh computers, 3 IBM computers, scanners, printers, modems, and robots). In short, the project is almost fully locally funded and has survived all budget cycles since 1984 [C]. However, the NORSTAR teacher states: "I don't know", when asked if she considers the innovation permanently funded. She wonders what will happen after the shuttle flight, but is optimistic that

support will probably remain. In the last 4 years, the innovation has developed into a robotics class for gifted science students, with the shuttle treated as just one of several projects [P].

Personnel

Although job descriptions exist for science teachers, there is no special job description for "NORSTAR teacher" [P]. The originator of the project (a teacher) rose to the position of coordinator at NORSTAR, but this caused conflict with the science coordinator (NORSTAR is a science elective) and the coordinator for gifted and talented programs (NORSTAR is also a gifted program).

When the originator left in 1989, the position was reclassified as "teacher". His departure was quite chaotic in that the position was filled for a period of 3 months by a central office administrator who was, in effect, demoted and sent back to the classroom. The administrator soon left the school system and the incumbent moved into the opening. She said that it took almost a full year to pull things back together [C].

Training

No training nor initiation has been offered to anyone involved with implementing NORSTAR [C]. The innovation (implementing it) is not required by the department of education for the Commonwealth of Virginia - although NORSTAR is recognized as a science elective [P]. Accreditation of the

school system is not dependent upon having the program.

Organizational Governance

NORSTAR is not required - it is above and beyond the normal curriculum [P]. A criticism of it has been that it caters to the few - its use is not widespread [C] (that these few can have anything they want in terms of equipment). In response the program has begun an outreach effort which involves inviting all other secondary schools to prepare and include "passive experiments" - with each school being allowed to include one test tube vial on the shuttle. Such experiments must meet NASA requirements and come from their approved list.

Supply and Maintenance

Norfolk Public Schools fully maintains the site and equipment [P]. Turnover of equipment is not applicable [C].

Section C: Reasons for Routinization

1 Prior Need: No clear and established prior need led to the innovation - rather a key, active innovator won the award from NASA on his own initiative and promoted its acceptance to Norfolk Public Schools administration. No other school system in the state has such a program, and the state does not require it.

2 Core: NORSTAR is clearly not a core function of Norfolk Public Schools, but rather a gifted and talented "elective" (a non-required class).

3 Competition: No active, internal adversary group has ever been identified - rather only anonymous, discontented rumblings of "privilege" from other teachers. These were discussed by the Norstar teacher, who reported that they are often openly stated to her. However, individual teachers have never organized to make any kind of group expression of opposition.

4 Service Payoffs: There are no clear, demonstrated service payoffs. All those interviewed felt it helps students gain entry into better colleges - MIT, Johns Hopkins, and the University of Virginia were offered as examples; but no-one could say with certainty that students would not have gained such entry anyway.

5 Community Support: "Yes" to strong support for the innovation from the community: NASA, parents, Old Dominion University, the United States Navy and local business mentors - engineers, scientists, and technicians. Many such members of the community have served as volunteers with Norstar, stimulated by the opportunity to participate in a NASA experiment.

6 Practitioner Support: The innovation does exhibit full practitioner support and enjoys excellent communication between all participants (but this was not always so during the period when the originator served as coordinator).

7 Active Innovator: The teacher who designed the project was the key figure. He was innovative and charismatic (a "teacher

in space finalist" in the NASA competition won by Crista McAuliffe). His departure led to a year of confusion and low morale among students, according to the current NORSTAR teacher, and to the then director of instruction.

8 Upper Level Administrative Support: Upper level administrative support has been positively associated with the routinization of the innovation. The former superintendent (who departed in 1992) was a big supporter, as is the science senior coordinator, the director of gifted and talented and the school board (the Norstar coordinator used to bring in NASA officials and astronaut suits once a year to school board meetings to promote the innovation).

Summary of Passages and Cycles Attained (Norstar)

[P] Full and permanent funding	0
[C] Survives annual budget cycles	+
[P] Duties included in job descriptions	0
[C] Survives personnel turnover	0
[P] Curriculum/certification required	0
[C] Training cycles exist	0
[P] Required by statute/regulation	0
[C] In widespread use	n/a
[P]Maintenance performed internally	+
[C] Survives equipment turnover	n/a

2 out of 8 = LOW routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	0
Core function	0
Competition/rivalry	+
Service payoffs	0
Community/client support	+
Practitioner support	+
Single, active innovator	+
Administrative support	+

Summary

Norstar is a marginally routinized innovation. While it has survived annual budget cuts, it is not considered permanently funded by those interviewed. The innovation was prominent under the originator and developer, and has suffered since his departure. While a new position and job description was created for the originator, this new position was allowed to lapse upon his departure. The innovation is not required by the state department of education, as are most instructional offerings, nor does any formal curriculum exist.

Only vague service payoffs have been attributed to Norstar. It is not a core function and did not arise out of prior need or crisis. The program can claim strong community/client, practitioner and upper level administrative support. It has received much positive attention in the local press.

CASE 8: NORFOLK PUBLIC SCHOOLS LIBRARY AUTOMATION

Persons Interviewed

Media services coordinator
Director of budget
Several librarians
Several students

Section A: The Background

Norfolk's Maury High School was effectively rebuilt in 1987 and part of the remodelling was an "automated library" - the first in the school system. It comprised a local area network made up of a computer file server, holding the library database, and attached terminals throughout the library with the capability of accessing the database. The library media center's holdings were entered into the database allowing the media specialist to track patron use, easily develop bibliography lists for teachers, document the use of materials, and produce an associated assortment of statistics. Inventory becomes a task which can be performed at any time of the year - taking a fraction of the time it did manually. Additionally, students are more rapidly and easily able to search for materials from the collection. Maury served as a pilot site for the long range automation project. Between 1988 and 1992, four more schools were added. In the spring of 1992, federal Chapter 1 funds were designated for library media center automation for eleven elementary "community schools". At the end of the 1992 fiscal year, local monies left over from various funds and accounts were used to

automate the remaining schools in the system. Each site was now fully equipped with the local area network database and terminals (a minimum of three), a printer, CD ROM drives providing electronic encyclopedias (CD ROM is at all middle and high schools, 2 or 3 at each site, providing access to newspapers, periodicals, atlases, dictionaries and other media), and a modem providing access to collections at Old Dominion University, Norfolk State University, the University of Virginia, Chesapeake and Virginia Beach Public Library.

Section B: Status of Routinization

Budget

An annual "service fee" of $1000 dollars is budgeted to pay for software maintenance, support and upgrades to the system. (To equip each school with hardware and software costs $11,600 and there are fifty sites, thereby totalling $580,000). The media coordinator considers the innovation permanently funded, but not yet fully funded as her goal is for "full building networks" [P]. Ruffner Middle School will be "full building" when rebuilding is complete in September, 1993. The annual service fee to the software company is locally funded, as were the startup monies for 39 sites [C]. The other 11 sites were funded from federal Chapter 1 funds. Lean budget years would undoubtedly see no expansion of the innovation.

Personnel

Job descriptions exist for administrators and practitioners of

the innovation, but these have not been updated by the media coordinators to include the new duties associated with it [P]. (Approximately 70 practitioners are involved in the schools, with two administrators devoted at central office). The two central administrators are clearly the key actors and each has been with the school system since the launching of the innovation [C].

Training

The vendors provided startup training to the media supervisor, and she trains everyone else. She continues to provide on the job training as the system is upgraded, and she provides initial training to new hires [C]. Additionally, a number of "automation mentors" have been trained, and each librarian has such a mentor to call upon. Use of the innovation is not part of any curriculum, certification requirement nor professional standards [P].

Organizational Governance

The innovation has quickly attained widespread use [C], spreading from 1 pilot site in 1987 to all schools by 1992, despite the fact that such automation of school librarians is not required by statute or regulation [P]. "No other system of our size in the nation is automated to this extent", states the media coordinator.

Supply and Maintenance

Supply and maintenance of all hardware is by Norfolk Public Schools, with the vendor supporting, trouble-shooting and

upgrading the software upon payment of an annual service fee [P]. No equipment turnover has yet occurred [C].

Section C: Reasons for Routinization Level

1. Prior Need

The media coordinator capitalized on the opportunity with the remodelling/ rebuilding of Maury High School to push for a state of the art media center, but there was no clear and established prior need for such a center. While many libraries are moving, or have moved, to automated systems there was no strong demand for such an enhancement in Norfolk from teachers, students or the community at large. Indeed the enhancement makes the Norfolk schools' library system one of the most advanced school library systems in the state.

2. Core

Library media centers are certainly core in Virginia's public schools in that the commonwealth's standards of quality and standards for accreditation both require media services for students.

3. Competition

No internal, active, adversarial group has ever existed in opposition to the innovation. The coordinator reports that she hasn't had opposition, nor competition, from any source. Rather she talks at length of the support from all quarters (principals, teachers, the department of management information systems, and a broad section of administration).

4. Service payoffs

Librarians testify to big student usage, greatly increased over the manual system ("students who never used the card catalogs use the terminals"), but no formal reports exist comparing the old manual system to current usage. Students reported enjoying using the terminals in the library and generally said they used the library now. Librarians also refer to time saved on checking books in and out, and on inventory, but also complain of time required in troubleshooting the system.

5. Community/Client support

There have been instances of strong community support from several PTA's - two middle schools raised up to $6000 in 6 months after a 1990 presentation by the media coordinator and the principals (Norfolk Schools provided matching funds). Similar support was later evidenced at 12 elementary schools.

6. Administrative support

Upper level administrative support has been very strong with the superintendent showing early, strong support and urging principals to push with the PTA's. The budget director and assistant superintendent for business and finance have been extremely supportive in directing surplus funds to the project at the end of fiscal year 1992 (June, 1992). Support has been broad from all assistant superintendents.

7. Active Innovator

The current media coordinator has clearly been a single,

active innovator for the project, being highly vocal and energetic in promoting the need for the automated systems. Principals, librarians and administrators interviewed testify that we would not have an automated library without the singular efforts of the coordinator.

8. Practitioner Support

The practitioners have widely hailed the innovation - the software removes much tedium from their work - with the scanning in and out of books, printing, as opposed to typing, of lists; and ease of use both for librarians and students. The media coordinator reported approximately 95% support from the beginning, with a small number passively opposed to the change. Regular and open lines of communication are demonstrated at monthly staff meetings, in frequent visits by the media supervisor for training and support, and via E-Mail communication using the new terminals.

Summary of Passages and Cycles Attained (Automated Lib)

[P] Full and permanent funding	+
[C] Survives annual budget cycles	+
[P] Duties included in job descriptions	0
[C] Survives personnel turnover	n/a
[P] Curriculum/certification required	0
[C] Training cycles exist	+
[P] Required by statute/regulation	0
[C] In widespread use	+
[P]Maintenance performed internally	+

[C] Survives equipment turnover n/a

5 out of 8 = Moderate routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	0
Core function	+
Competition/rivalry	+
Service payoffs	0
Community/client support	+
Practitioner support	+
Single, active innovator	+
Administrative support	+

Summary

The automated library innovation is moderately routinized. This is because it is not a requirement that school libraries be automated. Job descriptions have not been updated to reflect duties associated with library automation. Use of the automation is not part of any curriculum, nor is such knowledge or skill part of state certification requirements for school librarians.

No clear service payoffs were established for the innovation, nor did it arise out of any prior need. All 6 remaining propositions were found to contribute to routinization of the innovation, that is, library services are core in that they are required in the public schools; client, practitioner and administrative support were all present; the

coordinator was obviously the single, active innovator; and there was no evidence of internal competition or rivalry for the resources used for library automation.

CASE 9: CORONADO SCHOOL

Persons Interviewed

Principal of Coronado School
Several teachers
Former Principal
Directors of personnel; budget; research
Several students

Section A: The Background

Funded under Title 1 of the Elementary and Secondary Education Act, Coronado School began operation in the 1970-71 school year. It consolidated the efforts of three other continuing education centers. Coronado is an Alternative School for Pregnant Adolescents. The length of time students remain at Coronado depends upon how far along they are in their pregnancies. Every nine weeks, new students are enrolled at Coronado and students who have delivered are returned to their home schools. The following courses are offered at the school: english, mathematics, science, social studies, foreign language (French/Spanish), Health and Physical education (regular), special education, business, and home economics. Nutrition, parenting skills and work attitudes are stressed as integral parts of the curriculum. In addition to the above courses, (1) adaptive physical education classes are designed to assist students in labor and delivery; (2) parenting classes are offered to help the students better adjust to their new role as young parents; (3) special health education classes, taught by a nurse, are designed to give information

in prenatal care, parenting and infant care; (4) a full-time counselor is present to assist students in dealing with academic, career, personal and inter-personal concerns; (5) a registered nurse operates the clinic and assists students by monitoring their pregnancies; she also refers students to appropriate agencies for help; (6) the nursery, which is operated by STOP, accommodates 12 babies and is located on site at the school; and (7) bus transportation is provided for the students attending Coronado.

Coronado is a small, one-story building that provides for approximately 250 students per year. Students receive breakfast and lunch every day, and individual attention in small classes. They are evaluated by the same standards as all other students attending Norfolk Public Schools, receiving report cards at the end of each semester.

Section B: Status of Routinization

Budget

Coronado was federally funded from its adoption in 1970 (Elementary and Secondary Education Act Title 1 funds). In 1973, its funding switched to a collective source - the Norfolk Adolescent and Pregnancy Prevention Program, Norfolk State University, Norfolk Health and Social Services, Planned Parenthood, and Norfolk Regional Housing Authority. (Norfolk State University participated through a federal grant). Since 1985, the innovation has been totally locally funded. In

1990, a very tough budget year, it was slated for closure, but narrowly avoided this fate (Portsmouth had a similar facility which closed in the 1980's). Accordingly, although the innovation may be said to have survived annual budget cycles, it only barely did so in 1990, when its fate was debated lengthily by the school board [C]. Despite moving to local funds, Coronado is clearly considered an "extra" service by Norfolk Schools - similar to the service offered by the federally funded Skills Center [P]. Currently, the approximate cost for salaries is $300,000.

Personnel

Coronado has 1 principal, a secretary, a custodian, a cafeteria worker and 3 full-time teachers, a nurse, a guidance counselor, and part-time teachers of english, science, social studies, mathematics, foreign language, and special education. Job descriptions exist for all full-time employees - but only because the recently enacted Americans with Disabilities Act resulted in the personnel department writing generic descriptions for all teachers. They are not specific to Coronado school [P]. There is high teacher turnover from the facility, especially of the part-time (hourly) employees [C]. Part-timers earn no benefits.

Training

No training is provided for any personnel working at the site, and no orientation program of any kind exists [C]. Teachers are not required to be certified by the state, in that the

innovation is not required by the state (it is a Norfolk Public Schools' non-required "extra") [P]. In practice though, the school system employs certified teachers for the full-time positions.

Organizational Governance

The innovation is not required by any statute nor regulation [P] and, regarding attainment of widespread use, this factor is not applicable [C] in that the enrollment and use is determined by the number of pregnancies.

Supply and Maintenance

Supply and maintenance is fully provided by the school system [P]. Equipment turnover has not been applicable). [C]

Section C: Reasons for Routinization Level

1. Prior need

There was clear and established prior need in the early 1970's with approximately 900-1000 pregnancies each year in Norfolk alone among females 15-19 years old. This compares to approximately 1500 in 1992.

2. Core

Coronado is not a core service, in that a separate facility is not required by any statute or regulation. For instance, many special education services are mandated. Such a separate facility for pregnant teens is not. It is referred to as an auxiliary school by the administration, and is listed as such in the internal directory.

3. Competition

No internal, adversary group has existed in any active, organized fashion.

4. Service Measures

Lately, Coronado has had an average annual enrollment of 250 students. No clearly demonstrated service payoff has ever been demonstrated. The 1992 end of year report from Coronado refers to a steadily shrinking student dropout rate during the 10 year period beginning in 1982. The official drop-out rate fell from 15.8% of students to 5.6%, but these numbers are for the school system as a whole. Since the system waged an all out effort on many fronts (even employing a drop-out prevention coordinator) it is impossible to gauge Coronado's contribution. There is no data relative to the number of Coronado students among those who drop out, since data are not disaggregated in this way. While a 1991 report claims that the recidivism rate has declined, no data was presented to support the claim.

5. Community/Client Support

Community support was demonstrated in 1990 when local funding was almost withdrawn - which would have closed the site.

6: Practitioner Support

Practitioner morale is low. Inevitable turnover of the students means little or no school spirit - as at regular high schools. Part-time staff tend not to stay long due to low pay and no benefits. Full-time staff tend to transfer to other

sites. Additionally, there are instances of weak teachers being transferred to Coronado from the regular setting.

7. Single, active innovator.

No single, active innovator was identifiable for the innovation.

8. Administrative Support

While there has been upper-level administrative vocal support for the innovation, there has not been strong financial support. The best example of the lack of financial support is the use of hourly part-time teachers, who earn no benefits and continuously depart for full-time jobs elsewhere.

Summary of Passages and Cycles Attained (Coronado)

[P] Full and permanent funding	0
[C] Survives annual budget cycles	0
[P] Duties included in job descriptions	0
[C] Survives personnel turnover	+
[P] Curriculum/certification required	0
[C] Training cycles exist	0
[P] Required by statute/regulation	0
[C] In widespread use	n/a
[P] Maintenance performed internally	+
[C] Survives equipment turnover	n/a

2 out of 8 = LOW routinization

Summary of Factors Contributing to Routinization

Prior need/crisis	+

Core function	0
Competition/rivalry	+
Service payoffs	0
Community/client support	+
Practitioner support	0
Single, active innovator	0
Administrative support	0

Summary

Coronado School for Pregnant Teens is a marginally routinized innovation in Norfolk Public Schools. It is not considered fully and permanently funded, many of its teachers have no job descriptions, the facility is not required by the state department of education, and no special training exists for practitioners of the innovation.

While the facility does have community and client support, and clearly arose out of established prior need, none of the other propositions were factors contributing to routinization. In short, it is not a core function of the school system, it has no concrete service payoffs, has weak administrative support, and also weak support from a largely part time, high turnover teaching staff.

Chapter V contains the case study data analysis, along with presentation of findings and conclusions.

CHAPTER V

DATA ANALYSIS, FINDINGS AND CONCLUSIONS

Routinization Scores

This study's major objective was to identify specific factors which facilitate routinization of innovations in an urban school system. Before attempting to do so, it was first necessary to establish the degree of routinization for each innovation. This was done by employing the passages and cycles framework. The framework employs 10 organizational events which together allow an assessment of degree of routinization (very simply, the more passages and cycles that an innovation can be said to have survived, the more routinized it can be said to have become). Yin's study assumed each of the ten passages and cycles to carry an equal weight. While recognizing that the specific conditions of a particular school system may make some passages and cycles more important than others, this study also assumes equal weight for each event.

The framework for determining level of routinization identifies 10 organizational events that an innovation will either have or have not achieved. The achievement of an event was determined by questioning of the key actors identified for each innovation, using the questions detailed in the research protocol, and by examination of key documents. The achievement of events was then recorded in

the individual case study reports following the format described in the protocol (Appendix A), and these reports were annotated ("coded") with "P''s and "C"'s to show attainment of passages and cycles. The following table of events (Table 4) was then created directly from this coded data in the case study reports, thereby satisfying the methodological requirement to provide a chain of evidence linking the data to the conclusions.

TABLE 4 : TABLE OF EVENTS

	P1	C1	P2	C2	P3	C3	P4	C4	P5	C5	TOTAL
E-MAIL	+	+	+	+	0	+	0	+	+	+	8
SER'MASTER	+	+	+	N/A	+	+	+	+	+	+	9
FMS	0	+	+	N/A	0	0	+	+	+	+	6
SKILLS CTR	0	0	+	+	0	+	+	0	+	+	6
SIS	+	+	+	+	0	+	0	+	+	+	8
PAR CTR	+	+	+	N/A	0	+	0	+	+	N/A	6
NORSTAR	0	+	0	0	0	0	0	N/A	+	N/A	2
LIBRARY	+	+	0	N/A	0	+	0	+	+	N/A	5
CORONADO	0	0	0	+	0	0	0	N/A	+	N/A	2

The questions concerning routinization level (passages and cycles) in the research protocol are factual in nature, for example, "Is supply and maintenance performed internally

or externally?". Therefore, attitudinal and perceptual evidence was secondary in determining the level of routinization for each innovation. In short, each innovation's degree of routinization was determined by tallying the number of passages and cycles it achieved and by assigning a rating based on the total number achieved. The score was then converted into one of three ratings: highly routinized, moderately routinized, and marginally routinized; whereby 7 to 10 is highly routinized, 4 to 6 is moderately routinized and 0 to 3 is marginally routinized. This was determined by simply basing each rating on a one third division among scores.

The scores placed 4 of the 9 innovations in the highly routinized category, 3 in the moderately routinized category and 2 in the marginally routinized category (Table 5).

TABLE 5

RATINGS AND ROUTINIZATION SCORES FOR INNOVATIONS

Case Study	Type of Innovation	Routinization Score
		Highly Routinized
Servicemaster	Management	9
Student Info System	Technical	8
E-Mail	Technical	8
Parent Resource Ctr	client	6/8
		Moderately Routinized
Skills Ctr	Client	6
Financial Mgmt System	Technical	6
Automated Library	Technical	5
		Marginally Routinized
Norstar	Client	2
Coronado	Client	2

There were variations in the application of the passages and cycles framework to some of the nine innovations, and to then converting the scores for such innovations into one of the three ratings. What this simply means is that all 10 passages and cycles were not applicable to every innovation. For instance, "attainment of widespread use" was not applicable to Coronado School For Pregnant Teens, nor was "equipment turnover" relevant to the newly instituted automated library innovation. As a result, the routinization scores for only three of the innovations were based on all 10 passages and cycles. Despite these differences however, the scores of all nine innovations were converted where necessary to a 10 point scale for purposes of comparison and assignment into the three categories - highly routinized, moderately routinized and marginally routinized. For example, 2 out of 8 for Coronado was an attainment of 25% of the relevant passages and cycles. This converted to 2.5 out of 10, with the result that Coronado was considered marginally routinized.

The data indicate that 44% (4) of the innovations fell into the highly routinized category, 33% (3) into the moderately routinized category and 22% (2) into the marginally routinized category. The two marginally routinized innovations were both of the "client" type, (there was a total of 4 client innovations), while there was a mix of innovation types rated both highly routinized and

moderately routinized. Most obviously, 50% (2) of the client innovations were "marginally" routinized, while 50% (2) of the technical were "highly routinized, with none of the technical innovations being only marginally routinized (the other 50% were moderately routinized). Thus, there was no blatantly obvious distribution across the 3 rating levels by innovation "type", although the fact that both marginally rated innovations were of the client type is of some interest.

Data Analysis and Findings

An obvious question is whether or not the degree of routinization is explained by a simple relationship between the chronological age of the innovation and its routinization level. That is, are the older, more established, innovations highly routinized and the newer innovations only marginally routinized? Yin (1979) found that the age of the innovation made no difference in predicting the degree of routinization. He concluded this after arranging the data along two dimensions: the median age of all the innovations versus the degree of routinization. This study repeated this analysis. Table 6 shows that the proposed relationship did not exist. Surprisingly, in actuality all four cases below the median age of 8 years (the most recent, or newest innovations) were highly routinized.

Eight other factors were proposed to facilitate routinization of the innovations and all of those factors

TABLE 6

Age of Innovation by Degree of Routinization

	Degree of Routinization		
	High	Moderate	Marginal
Case Studies (n=9)			
Median age = 8yrs.			
Above median age	0	2	1
At median age	0	1	1
Below median age	4	0	0

were analyzed in each of the case studies. The propositions were that an innovation had:

(1) prior need (from crisis conditions or chronic service deficiencies)
(2) core application in the school system
(3) minimal competition for resources
(4) service payoffs
(5) community / client support
(6) practitioner support
(7) active innovator support
(8) top administrative support

The analysis consisted of a simple association between each factor and the degree of routinization, employing data gathered together into case studies after extensive personal interviews and examination of case documentation. Most data were of the anecdotal, nominal and ordinal types and therefore no attempt was made to employ any inferential, multivariate analysis - which generally requires interval data. Further, formal use of quantitative analysis techniques was prevented by inadequate sample size and no

control nor balance of numbers of cases assigned to the cells of the grouping factors. There were only 9 cases overall, and there would always be fewer than 5 cases in any cell used with contingency tables. With correlational techniques such as regression, there are further problems regarding underlying assumptions of the methodology. Thus a variety of cross-case (cross-site) qualitative techniques was employed in analyzing the data.

Initially, the data was arranged in what Miles and Huberman (1984) call a site-ordered predictor matrix. This matrix (Table 7) summarizes the presence or absence of each factor for the nine case studies. A plus symbol (+) indicates that the proposed factor was identified as existing (being present) for a particular innovation. For instance, for the Servicemaster innovation, all of the factors proposed to facilitate high routinization were present.

Inspection of the data table showed that all of the highly routinized cases had service payoffs, upper-level administrative support, active innovator support, practitioner support, and lacked competition from an internal opposition group. Furthermore, upper-level administrative support and service payoffs almost exclusively favored the highly routinized cases. They are mutually very similar also, except that service payoffs was never associated with a low routinization outcome.

TABLE 7

SITE ORDERED PREDICTOR OUTCOME MATRIX: FACTORS CONTRIBUTING TO ROUTINIZATION

	MARGINAL		*MODERATE*			*HIGH*			
	Coro-nado	Nor star	Skills Center	Lib-rary	FMS	E-Mail	SIS	Service Master	Par Ctr
PRIOR NEED	+		+		+		+	+	
CORE				+	+		+	+	
LACKS OPPOSIT.	+	+	+	+	+	+	+	+	+
SERVICE PAYOFFS			+			+	+	+	+
COMMUNITY SUPP	+	+	+	+	N/A	N/A	N/A	+	+
PRACT'ER SUPP		+	+	+		+	+	+	+
ACT. INNOVATOR		+		+	+	+	+	+	+
ADMIN SUPPORT		+		+		+	+	+	+

While active innovator support and practitioner support were associated with every case of a high outcome, both were also associated with two out of three of the middle outcomes. Indeed, these inputs were associated with nearly identical results in outcome proportions as distributed among low, medium and high ratings. Lack of any internal opposition group was true for all nine innovations.

The criterion of "core application" was not a characteristic of a low routinization score, but was present in 2 out of the 3 cases with moderate routinization, as was prior need. "Prior need" and "core" did not even weakly favor either extreme of routinization (low or high).

Community support was not considered a useful input in studying these particular non-strategic innovations in that it was not applicable for one third of the nine cases.

"Service payoffs" was the individual predictor associated most exclusively with the high outcomes. A site-ordered descriptive matrix (Table 8), containing first level descriptive data from all sites, with the sites being ordered according to the "service payoff" variable, allows us to see the differences among highly, moderately and marginally routinized innovations for this proposition.

TABLE 8
SITE-ORDERED DESCRIPTIVE MATRIX: ROUTINIZATION LEVEL AND SERVICE PAYOFFS

Innovation	
Highly Routinized	Service Payoffs?
PARENT RESOURCE CENTER	Yes. An average of 87 phone calls are received every week from special education parents. Department of special education coordinators express that a big service is provided in reducing repetitive telephone queries to them, and by the center picking up surrogate parent training (since 1986).
SERVICE-Master	Yes. 72 fewer custodial workers needed at an estimated savings of $250,000 per annum since the innovation's inception.
STUDENT INFORMATION SYSTEM	Yes. A reports Hot-Line facility set up in 1990 has generated 420 reports to date. Users laud the improved access to student data.
ELECTRONIC MAIL	Yes. All respondents cited great time-savings in communicating with others - a big cut-down in telephone tag and faster action on many matters due to break-down of hierarchical barriers to communication. MIS reports demonstrate increasing use of E-MAIL from its beginning to present.

Moderately Routinized

FINANCIAL MANAGEMENT SYSTEM	No new service payoffs from the innovation (apart from "improved information management").
AUTOMATED LIBRARY	Maybe. Librarians testify to greatly increased usage of the terminals, but cannot support with numbers on checkout of materials.
SKILLS CTR.	Yes. 65%-68% of enrollees are placed in jobs.

Marginally Routinized

NORSTAR	No. No-one could state with authority that there were demonstrable service payoffs (The Norstar teacher replied "I don't know", in response to the question: "Would students have gained entrance to the colleges they did w/out Norstar?").
CORONADO SCHOOL	No. No clearly demonstrated service payoffs have ever been claimed for the approximately 280 students who go through each year - apart from undocumented allusions towards dropout rate.

A pattern can be easily seen whereby the highly routinized innovations all have demonstrated concrete service payoffs, whereas the marginally routinized can report none, and the moderately routinized can report only vague payoffs or none at all (with the exception of the skills center).

A similar matrix (Table 9) was prepared for the factor "upper-level administrative support", this being the second factor determined to favor the highly routinized cases.

Table 9

Site-Ordered Descriptive Matrix: Routinization Level and Upper-Level Administrative Support

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HIGHLY ROUTINIZED

Parent Resource Center

Yes. Upper-level administrative support has been there since the innovator convinced the school system to invest in the center. Undoubtedly, the low cost of the innovation made support easy, as have the positive results from parents and special education staff. The assistant superintendent for instruction, assistant superintendent for personnel, and director of special education all vocalized strong support for the center.

Servicemaster

Yes. The chief financial officer, budget director, director of school plant, and director of personnel all stated strong support for the innovation. The budget director was impressed with the cost benefits and school plant director with improved cleanliness. The personnel director liked the better management provided. The former superintendent had initially introduced the idea for the innovation upon learning of it from another school system.

E-Mail

Yes. Had early support from the innovator (the Management Information Systems director), guidance director and the director of instruction. While other administrators were disinterested at first, they almost exclusively now support it. This is demonstrated both by their vocal support and management information systems' reports on level of usage by site for all 60 Norfolk Public Schools sites.

The Student Information System

Yes. The deputy superintendent during the crucial startup years oversaw management information systems and gave strong support in adding personnel, hardware and software; with the superintendent's cabinet following his lead. At this time, crucial support was required in upgrading the mainframe computer and operating system. Without funding of these enhancements at the crucial early stage, the innovation would have collapsed.

MODERATELY ROUTINIZED

The Automated Library

Yes. There has been strong support from the administration from the beginning. The previous superintendent urged principals to push for funds from the Parent Teacher Associations. Surplus end of year funds have been directed to the innovation.

The Skills Center

No. While the adult and vocational education director and one assistant superintendent are vocal supporters, the former superintendent stated clearly that no local funding was possible for the skills center, that it was very much an auxiliary school in the Norfolk system.

The Financial Management System

No. The innovation has support in that it provides a core function of the organization, however, there is little direct support beyond what is basically required. For example, there is no strong commitment to training, for requested additional personnel, nor for the installation of several enhancing subsystems such as those handling applicant tracking and benefits management.

Marginally

Norstar

Yes. Norstar has had strong upper level administrative support, although this is not as strongly vocalized now as it was initially. It is "politically correct" to support Norstar in Norfolk Public Schools, stated several of those interviewed.

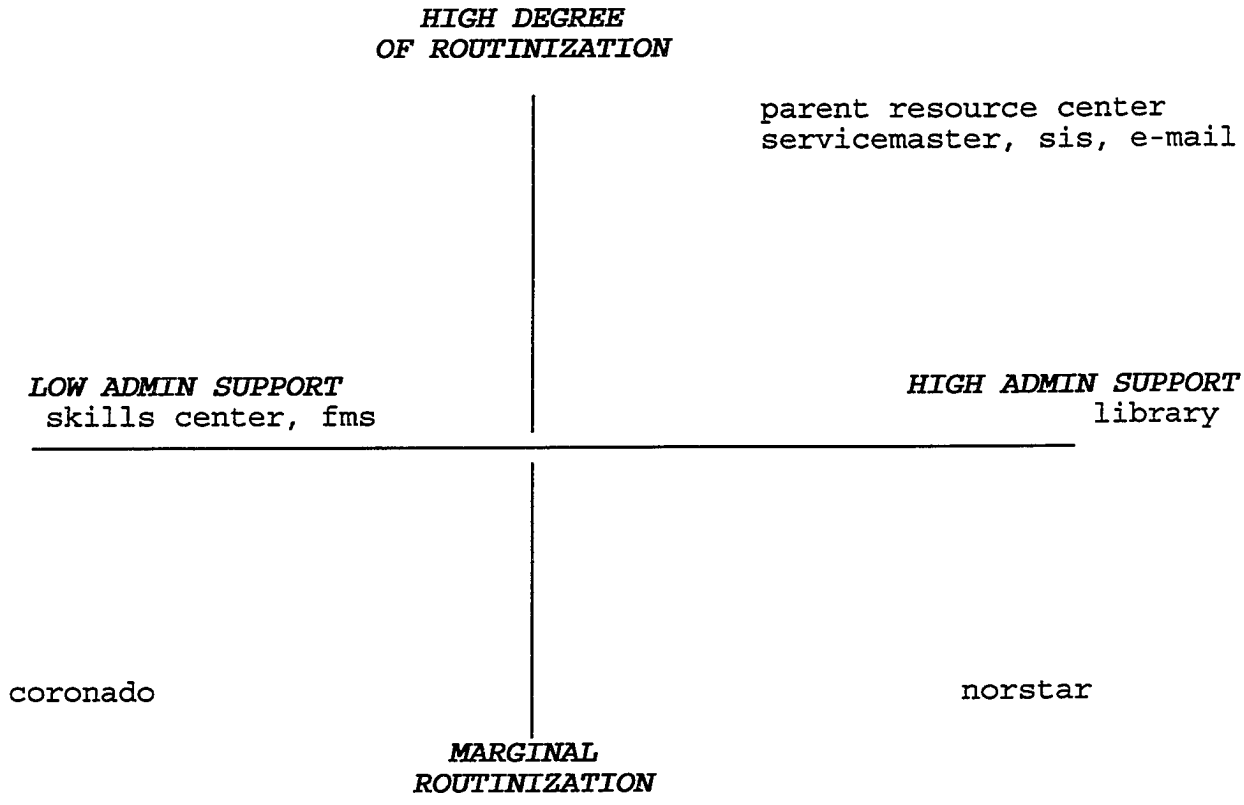
Coronado

No. There has been weak upper-level administrative support for Coronado, perhaps best illustrated by the employment of part-time hourly employees with no benefits, rather than contracted teachers.

The table shows that all 4 highly routinized innovations had upper-level administrative support. Similarly, a "scatterplot" (Table 10) demonstrates well the relationship between routinization level and "upper-level administrative support". Yin (1979) came to a similar conclusion in his study. He also found strong evidence linking "practitioner support" and the "core service" factors to highly routinized innovations.

TABLE 10

SCATTERPLOT RELATIONSHIP BETWEEN UPPER ADMINISTRATIVE SUPPORT AND ROUTINIZATION LEVEL



Beyond this, the study found, in common with Yin, that innovations need some person to serve as an active innovator to facilitate "any" type of routinization, since seven of the nine innovations identified such a person (and all 19 of Yin's innovations had a single active innovator). This study concluded the same requirement for practitioner support (7 out of 9 had such support), that is practitioner

support appears to be necessary for an innovation to move from implementation to some degree of routinization. Also, none of the innovations experienced any significant internal opposition, indicating the importance of this factor in attaining routinization.

Yin (1979) found that an innovation is more likely to be highly routinized if it involves a core application and has the support of other persons within the agency such as the top administrators and the practitioner group. This study found also that top administrator support was necessary for high routinization, but that the only other factor that could be shown to be substantially related to high routinization was "service payoffs".

Conclusions

The findings are that the degree of routinization of innovations is related to upper administration support and service payoffs. Further findings are that the attainment of any level of routinization is generally associated with the presence of a single, active innovator, and of practitioner support, and with the absence of internal competition for resources. It was also found that there is no obvious distribution across the three rating levels by innovation "type", and that the degree/level of routinization could not be explained simply by its age.

It is plausible therefore to say, in collaboration with

Yin's findings, that key actors should be encouraged to promote and market the innovation. The change agent(s) should recognize the importance of and seek out administrative support, should ensure that practitioners are comfortable with the change, and should be wary of selecting innovations with no obvious service payoffs.

Clearly, the findings still require corroboration by further research. While the main purpose of further research should be to provide advice to administrators, a second purpose should be to refine the passages and cycles framework employed to determine degree of routinization. This study found weaknesses in the framework. For instance, "personnel turnover" was not relevant for three (33%) of the 9 innovations (automated library, FMS and Servicemaster), and "equipment turnover" also was not relevant for three (Coronado school, Norstar, and the automated library). That is, the impact of such events could not be determined since they had not occurred. It would be extremely useful to develop a passages and cycles framework more universally applicable than Yin's for determining the routinization level of bureaucratic innovations.

A weakness in Yin's work, and also in this study, is the assumption that all 8 factors proposed to facilitate routinization carry equal weight. Clearly some factors are of more importance than others. Further research to

determine varying levels of importance for the propositions would be beneficial to practising administrators.

The key policy question remains: "How should an innovation (once adopted and implemented) be used in order to increase the likelihood of routinization?" What organizational procedures might be explicitly changed in order to accommodate or expedite an innovation to increase the likelihood of routinization? This study finds that the more important factors are upper-level administrative support, measurable service payoffs, presence of an active innovator, practitioner support and lack of internal competition for resources.

Future research should focus on the following:

- The presence of a staff person who can serve as an active innovator/coordinator;
- The degree to which the innovation matches the priorities perceived by practitioners and evidence of the innovation being well-received by practitioners in other jurisdictions;
- The degree of upper administrative support for the innovation;
- The varying levels of importance of the relevant factors;
- Finally, on how to identify service payoffs in terms that practitioners and management can directly experience. (In the case studies, these included convenience, reduced time and effort, improved accuracy, cost savings, better access to data, increased use of resources, job placement and reduced load on professional staff).

Further research would be useful in corroborating these findings, and therefore helpful to administrators in

designing effective innovations for better delivery of services in an urban environment.

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APPENDIX A: THE CASE STUDY PROTOCOL

GUIDELINES FOR SITE VISITS AND CASE STUDY REPORT

The following are simple self-reminders for site visit procedures. Also included is a set of the topics to be covered by the site visit and to be included in the case study report.

1. While on site, formally request, and be alert for, relevant reports, documents and artifacts that can be obtained.
2. In writing up the cases, be sure to mention each of the 9 proposals, even though a proposal may have turned out to be irrelevant.
3. In writing up the cases, make the list of informants a separate attachment to the case. Do not use names of individuals in the cases themselves, and avoid attributing specific comments to specific informants.
4. The general order of topics for each case report should be:

I. Background and description of the innovation (about 2 pages)

II. Status of Routinization (cover all passages and cycles use as subheads if possible - about 4 pages).

III. Reasons for Routinization Status (cover proposals in the priority order of their importance (4 pgs).

I. BACKGROUND

School Dept./Site: _____ Visit Date:_____

Respondent's Name: _____

Title: _____ Phone #: _____

A. Nature of the Community (all information from secondary sources except questions 5 and 6)

1. Population
2. SES and demographic data
3. Number of employees
4. Geographic location and type of school system governance
5. Has the community changed much in the last ten years?
6. What are the pressing current problems, concerns, hopes of the school system with respect to community needs?

B. Nature of the Dept./Innovation

1. General function

2. Number of employees and annual operating budget; budget history including anticipated expansion or cuts.

3. Dominant type of personnel organizations:
   --Unions/Associations
   --"Natural" employee groupings
   Any salient recent events affecting the department e.g., personnel turnover, restructuring, unusual publicity

4. Where does the innovation fall within the school system?
   --Who is involved in the day-to-day operation of the innovation (i.e. key personnel and titles).
   --How important is the innovation for the day-to-day operation of the school system?

5. How did the department come to use the innovation?
   --Why was it thought to be a good idea?
   --Initial funding?
   --Who was the initiator, main supporter, continued supporters?
   --Was there ever opposition to the innovation?

6. What documents, reports, memoranda, RFP's, contract etc. related to the innovation are available?

II. STATUS OF ROUTINIZATION

A. Budget

Passage: funding change from hard to soft money / is now considered fully and permanently funded.
Cycle: survives annual budget cycles.

1. What is the annual cost of the innovation in money/personnel.
   --Budget history?

2. Is the innovation now considered permanently and/or fully funded? What is the source of the funding?

3. Is the budget support money/personnel part of the regular budget?
   --If so, when and how did it occur?
   --If not, for how many years have requests been made for regular funds or permanent positions?

4. If there were budget cuts would the innovation be treated as a typical school system program, or would it be given different treatment?
   (or: Are budget decisions about the innovation made in the same way as budget decisions about other programs?)
   (or: Do you feel uneasy about the future funding of the innovation?

B. Personnel

Passage: Functions become part of job description or pre-requisites.
Cycle: Survives introduction of new personnel/promotion of key personnel.

1. How many people are involved full-time in operating the innovation?
   --Status and position?
   --Are there special job classifications? When established?

2. How many practitioners use the innovation as part of their job?
   --A new function? When?
   --New job descriptions?

3. Has the agency brought in any new staff in connection with the innovation whose qualifications or background differed from that of the existing staff? How smoothly did the introduction of new personnel go? (Was the innovation set-back by the departure of old or

introduction of new personnel?

4. Has the innovation survived a round (how many cycles) of turnover among personnel or among practitioners who use the innovation? What personnel have been promoted or left for new jobs elsewhere?

5. If formal job classifications do not exist, are the duties of the innovation formally written into existing job descriptions?

C. TRAINING

Passage: Skills taught become part of professional standards, curriculum or certification requirements.
Cycle: Skills are taught during many training cycles.

1. What kind of training program is associated with the use of the innovation?
   --Special versus on-going programs
   -- On Job Training versus basic external training
   --When started and (how many cycles)?
   --Part of any training manuals or professional standards for operation of the innovation?

2. Is there any evidence of formal changes in practitioner certification procedures or performance standards that reflect the use of the innovation?

3. Are the skill requirements for the innovation taught during an ongoing basis or on a cyclical basis?

4. Are they incorporated into formal curriculum?

D. Organizational Governance

Passage: Use of innovation is part of statute, regulation, procedures manual.
Cycle: Attainment of widespread use.

1. Has the use the innovation led to specific revisions in operating manuals or organizational forms and paperwork?

2. Is the use of the innovation mandated by:
   --Legislative act or executive order
   --Reference to specific service standards
   --Judicial decisions

3. Are there any specific old functions that have been replaced by the innovation?

--If so, how and when was replacement operationally established?

4. Is the innovation's use widespread and frequent?
5. Describe its level of use? How has it grown over the years?

E. SUPPLY

Passage: Supply and maintenance is provided by the agency or on long-term contract basis.
Cycle: The innovation has survived equipment/supply turnover.

1. Have any aspects of the supplies/equipment involved in the innovation changed since it was first introduced?
   --New equipment/supplies purchased.
   --Second generation materials (more cycles?)
   --Supplies/equipment improvement or redesign (if so, who was involved in the effort?)
   --How has equipment/supplies turnover impacted on the innovation?

2. Has the equipment (supplies) involved in the innovation been used for any function other than that for which it was originally intended?

3. To what extent has equipment (supplies) been rented or purchased?
   --Significant dates, if purchased
   --Long-term contracts?

4. Is supply and maintenance performed internally?
   --if externally, is a long-term contract in existence?

III. REASONS FOR ROUTINIZATION STATUS:

1 What was the motivation behind the introduction of this innovation? How did it come to be introduced? (P1)

2. Was the innovation adopted out of crisis conditions? (P1)

3. Was there clearly established prior need for the innovation? (P1)

4. General function and range of specific functions. Is it a core application? (P2)

5. What services are provided? (P2)

6. Who benefits directly or indirectly? (P2)

7. Are there any groups within the school system who oppose the innovation (and who might support some other innovation)? (P3)

8. Why do they oppose it? (P3)

9. How have they opposed it? (P3)

10. Any specific measures of service payoffs or procedures? (P4)

11. What are the perceived benefits of this innovation? (P4)

12. Has the innovation created any problems, anticipated or otherwise? (P4)

13. Outside the school system and local government, who have been the most enthusiastic supporters of the innovation? (P5)

14. Who in the community is likely to be aware of the innovation? (P5)

15. Who in the community benefits most from the innovation? Who is likely to support it; oppose it? (P5)

16. Is there apparent resistance or acceptance by practitioners in using the innovation? (How demonstrated? Would practitioners resist removal of the innovation?) (P6)

17. Is there good communication & camaraderie between all levels of staff regarding this program? (P6)

18. How is communication manifested (openly, with input from all or in a remote, authoritan manner)? How could it be improved? (P6)

19. Who were the key actors who first worked on implementing this innovation? (P7)

20. To what extent has there been an active innovator who:

    Coordinates/promotes/markets the innovation?
    Seeks to institutionalize the use of the innovation?
    Employs a loose entrepreneurial (rather than rigid) managerial style? (P7)

21. To what extent do top administrators support the innovation? (P8)

22. How is their support indicated? (P8)

23. What are the titles of supporters? (P8)

THOMAS McANULTY

Born in Belfast, Northern Ireland on December 21, 1952; the fourth of seven children.

EDUCATION:

Masters in Education (M.ED.), Salisbury State University, Maryland, 1980.

Graduate Certificate in Education (Grad. Cert. Ed.), St. Joseph's College, Belfast, Northern Ireland, 1976.

Bachelor of Arts (B.A.), Queen's University of Belfast, Northern Ireland, 1974.

RECENT EMPLOYMENT HISTORY:

Norfolk Public Schools

- Acting Director of Personnel, 1992-93 school year.
- Personnel Coordinator, since December, 1989.
- Customer Support Manager/Systems Analyst 10/86-12/89.
- Programmer Analyst 7/85 -10/86.
- Computer Programmer 6/84 -7/85.

TEACHING EXPERIENCE: (8 yrs.)

- Computer Programming Instructor, (NTVC, Norfolk) 6/82-6/84.
- Middle School social science teacher, 1978-1982.
- Elementary school teacher, 1976 -1978.

PROFESSIONAL MEMBERSHIPS:

American Society of School Personnel Administrators.
Society for Human Resource Management.